Network 2011 *Final Report*

Toronto Transit Commission

June 1986

The Municipality of Metropolitan Toronto · 1953

NETWORK 2011

FINAL REPORT

Metropolitan Toronto Planning Department

Toronto Transit Commission

June, 1986

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EXECUTIVE SUMMARY

1. Introduction

On May 29, 1985, the Metropolitan Economic Development and Planning Committee, and the Metropolitan Transportation Committee jointly reviewed a Metro/T.T.C. staff report entitled "Network 2011: A Rapid Transit Plan for Metropolitan Toronto." In the year that has elapsed since that meeting, a great deal of review, debate and new analysis has taken place. Among the most notable activities are the following:

- the Network 2011 plan was circulated to the area municipalities, to the regional municipalities surrounding Metro, to the Minister of Transportation and Communications, and to other concerned groups and agencies; almost all of the above have responded in one way or another;
- a major public information program was launched to inform citizens about Network 2011, including a newspaper insert distributed to 500,000 homes, advertising on T.T.C. vehicles, a direct telephone link for citizen input, and a series of public information centres covering each municipality in Metropolitan Toronto;
- concerned citizens and organizations asked for further information, and Metro/T.T.C. staff participated in numerous open houses and public forums on the subject of Network 2011.

After a year of debate, most Metropolitan citizens are familiar with the Network 2011 strategy, but it would still be useful to summarize its four main points:

- Provide long-term funding for rapid transit at an affordable rate, which is estimated by Metro staff at $95 - $100 million annually as measured in constant 1985 dollars, and split 25/75 by Metro and the Province;

- Phase the construction of the rapid transit projects in increments which would take five to seven years each, and then open each segment for the riders as it is completed;

- Review overall priorities every five years, and respond to changing circumstances in land use and travel patterns as they occur, acknowledging that no one can predict them perfectly;

- Apply interim solutions to cope with day-to-day operating problems that occur as a result of this long-term incremental approach.

The proposed phasing for the Network 2011 plan was as follows (all costs are in 1985 dollars):

1. Build a Harbourfront/Spadina light rail transit line immediately ($93M);

2. Priority 1: Build the Sheppard Subway from Yonge Street to Victoria Park Avenue ($500M);

3. Priority 2: Build a downtown relief line ($565M);

4. Priority 3: Build a busway in the Eglinton West corridor ($395M);

5. Priority 4: Complete the Sheppard Subway ($750M); and

6. Priority 5: Upgrade the Eglinton West Busway ($925M).

The above construction plan would cost about $2.8 billion (1985 dollars) and would have been completed by about 2014.

There has been a wide range of response to the above proposals, and these have now been analyzed by staff. The responses have provided a number of additional insights on the wider issues involved, and some new ideas. This

Final Report on Network 2011 provides the Metro/T.T.C. staff recommendations as modified by the past year of community input.

2. The Responses to Network 2011

In brief, the major responses to the Network 2011 proposal were as follows:

Borough of East York

- The Downtown Relief Line should be supported as first priority, extended to Thorncliffe Park.
- If the Sheppard Subway is started first, then the Downtown Relief Line should be no lower than priority 2.

City of Etobicoke

- The Eglinton Line should be a rail service instead of a busway, and should be completed before the mid-1990's.
- Travel across the Metro West boundary should be monitored.
- A yard site should be found immediately for the Downtown Relief Line and the Westwood site should be freed for development.
- The Harbourfront LRT should be funded from private sources.

City of North York

- The Network 2011 strategy should be approved and the Sheppard Subway between Yonge Street and Victoria Park Avenue should have first priority.

City of Scarborough

- The Sheppard Subway should be built from an extended Spadina Subway to the Scarborough City Centre as one project.
- GO Transit service to the downtown should be improved, and the Downtown Relief Line should be delayed.
- T.T.C., GO Transit, and regional transit services and fares should be more integrated.
- A wider range of options should be considered after the Sheppard Subway is completed, including a circumferential line in the northwest part of Metro.

City of York

- The Eglinton West Line should have higher priority.
- The Eglinton West Line should use rail technology and should be built from the Spadina Subway to Scarlett Road first.
- The Teperman/Westside Mall site should not be considered for a yard.
- A Provincial/Metro/GO/T.T.C. study should examine the potential for service and fare integration, and other issues.
- The Provincial government should undertake a review of Network 2011 and not take any position on it until this review is completed, "with specific attention being paid to reviewing the priority proposed for the Eglinton West Transit Line".

City of Toronto (Staff position)

- The option of the Downtown Relief Line as a second priority should be endorsed.

- The Province should co-ordinate the five-year review of the plan.

- Transit service on both Sheppard and Eglinton Avenues should be improved, but no decision should be made by Metro until the Province has indicated its position on the Network 2011 report.

- The interim transit measures for the Central Area should be pursued.

- The Downtown Relief Line should go along Wellington Street rather than Front Street.

Board of Trade of Metropolitan Toronto

- We should not spend billions of dollars on rapid transit, since the need has not been proven.

- Buses in reserved lanes could be a low cost alternative, and GO Transit could play a greater role.

- More money should be spent on road improvements.

Toronto Redevelopment Advisory Council

- are strongly supportive of reasonable expenditures in the transportation sector.

- GO Transit, Highway 407 and Metro road improvements are required, whereas, some of the Network 2011 facilities are not really necessary.

Streetcars for Toronto Committee

- Metro should undertake an objective analysis of Light Rail Transit alternatives before making any commitment to new rapid transit construction.

Region of Durham

- Not enough consideration was given to cross-boundary problems.

- The eastern section of the Sheppard Subway should be completed sooner.

Region of Peel

- The Provincial government should undertake a review of Network 2011 and not take any position on it until this review is completed, "with specific attention being paid to reviewing the priority proposed for the Eglinton West Transit Line."

Region of York

- The east/west rapid transit line should be located in the Finch hydro right-of-way corridor, rather than along Sheppard Avenue.

- If the line is not in the hydro corridor, the Provincial government should not finance it.

- If the Sheppard Subway is built, then perhaps a busway should be built in the hydro corridor.

City of Mississauga

- The Eglinton Rapid Transit Line should be completed by the mid-1990's.

- The employment projections for Mississauga used in the Network 2011 report should be reviewed.

Town of Markham

- The east-west rapid transit line should be located in the Finch hydro right-of-way, rather than along Sheppard Avenue.
- Concerned that the feeder bus network serving a Sheppard alignment would be more costly for the Town than would a network serving a Finch alignment.

3. The Principal Issues

The breadth of the responses reflects the great concern that the municipalities and the regions have for the Network 2011 recommendations. The responses from citizens asked many of the same questions, and the principle issues can be summarized as follows:

1. Land Use and Development Objectives

   To what extent should we support the Metroplan objectives, especially the subcentres ?

   Should we concentrate on one development corridor, or do a little bit in each one ?

2. The Role of GO Transit

   Should GO Transit be significantly expanded, especially into the downtown ?

   Should we have fare and service integration between GO and the T.T.C. and with other transit operators ?

3. The West Metro Boundary

   Are the current and future problems at the western boundary of Metro the most serious in the region ?

   Is the Eglinton West Rapid Transit Line the answer to these problems ?

4. The Central Area

   Is the Downtown Relief Line needed within the next ten years ?

5. The Sheppard/Finch Corridor

   Should a facility here have the highest priority, along which alignment should it be constructed and should it be built as a subway ?

4. Conclusions

The Metro/T.T.C. staff have reviewed the original Network 2011 proposals in light of all the above comments and issues, and have concluded the following:

1. **There is both a political and public perception that further investment in rapid transit is desireable from Metro's point of view, despite the significant costs involved.**

2. **The original Network 2011 strategy of (i) providing long-term funding; (ii) phasing the construction, (iii) reviewing overall priorities every five years, and (iv) applying interim measures met with general approval and is still valid. However, a fifth element should be added: (v) implementing inter-regional transit improvements.**

3. **Higher priority should be given to increasing GO Transit train capacity into the downtown, and service and fare integration between GO and the T.T.C. should proceed as soon as possible, with acceptable financial arrangements to be negotiated.**

4. If GO capacity is significantly increased and interim relief measures implemented, construction of the Downtown Relief Line could be deferred beyond the initial estimates proposed in the Network 2011 plan.

5. At the West Metro boundary, incremental road improvements, transit service integration and expansion, and improvement of GO rail services can meet travel demand requirements for about two decades, and there is no indicated need to increase the priority of the Eglinton West Rapid Transit Line.

6. After reviewing all of the responses, and undertaking additional analytical work as required, Metro/T.T.C. staff have confirmed that the Sheppard Subway should be the first rapid transit priority, and that the section from Yonge Street to Victoria Park Avenue should be completed first. (See Exhibit ES.1)

7. At this point there is no need to make a commitment on the second priority for rapid transit investment, i.e. on what should be done next, until after the first five-year review.

8. There is some indication that completion of the entire Sheppard Line may become the best course of action, if the measures suggested above for the Central Area and the West Metro boundary are carried out and prove successful. However, the actual decision can be deferred until the first phase of the Sheppard Line is close to completion.

9. Every effort should be made to find a replacement yard site for the Westwood Theatre property. The release of this site would enhance the development potential of the Kipling/Islington Centre designated in the Metropolitan Official Plan.

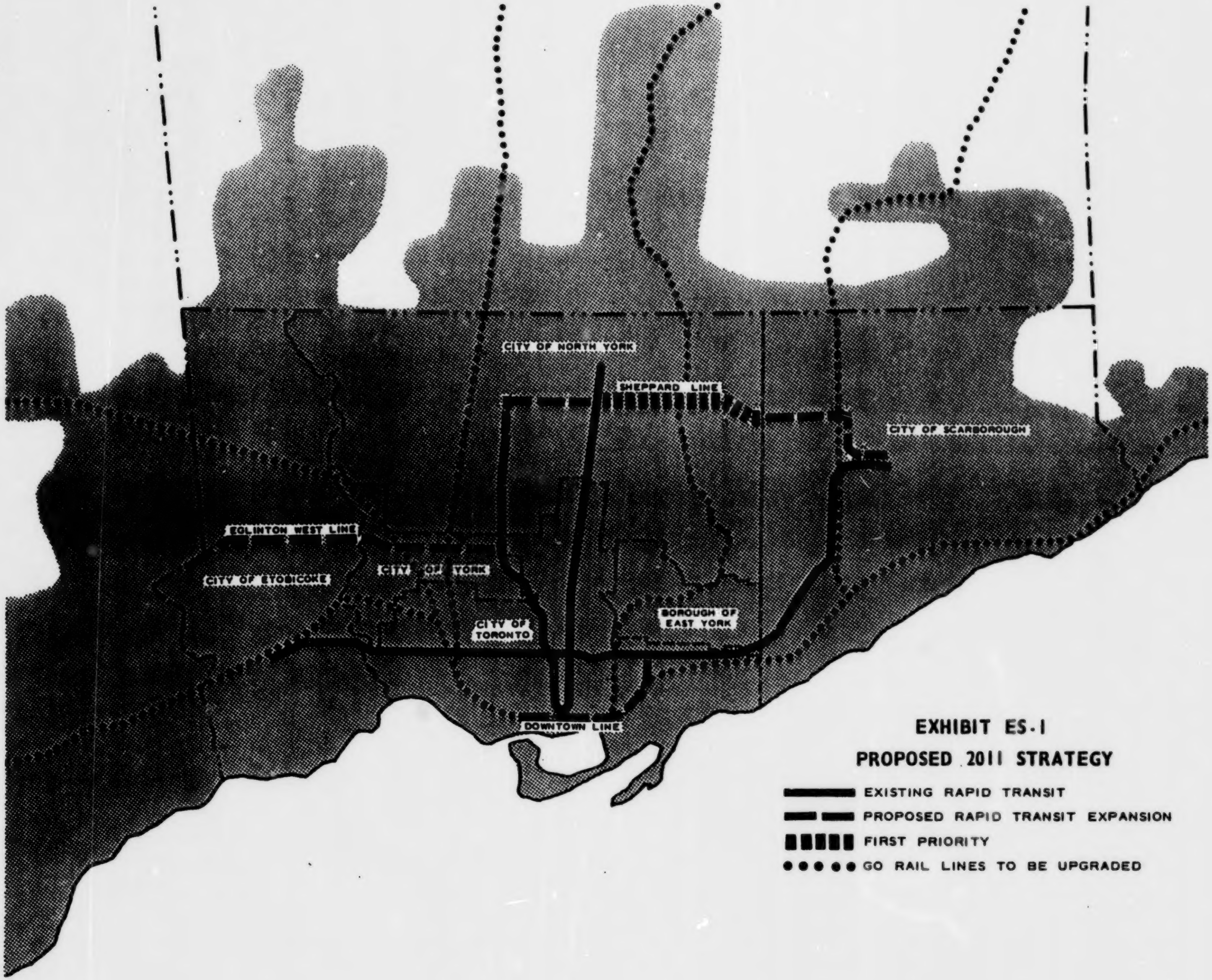
CITY OF NORTH YORK
SHEPPARD LINE
CITY OF SCARBOROUGH
EGLINTON WEST LINE
CITY OF ETOBICOKE
CITY OF YORK
CITY OF TORONTO
BOROUGH OF EAST YORK
DOWNTOWN LINE
EXISTING RAPID TRANSIT
PROPOSED RAPID TRANSIT EXPANSION
FIRST PRIORITY
GO RAIL LINES TO BE UPGRADED

EXHIBIT ES-1

PROPOSED 2011 STRATEGY

I. INTRODUCTION

A. Summary of the Network 2011 Strategy

"Network 2011: A Rapid Transit Plan for Metropolitan Toronto" was a consolidation of three separate rapid transit feasibility studies undertaken at the request of Metropolitan Council.

Based on the results of the Accelerated Rapid Transit Study (ARTS) completed in 1982, Metropolitan Council in June 1983, directed that detailed rapid transit feasibility studies be undertaken for the Sheppard/Finch corridor, the Downtown Relief Line and the Eglinton Avenue West corridor. These studies, the Sheppard/Finch Rapid Transit Corridor (SFRT) Study, the Downtown Rapid Transit (DRT) Study and the Eglinton West Rapid Transit (EWRT) Study each recommended that rapid transit was justified in their respective corridors. The SFRT study was conducted, initially, as part of a broader North Metro Rapid Transit Corridor study which was initiated as part of the Province's GO-ALRT program.

Upon completion of the above studies, a Systems Priority Study was initiated to examine the results of the three rapid transit studies and to establish priorities for their implementation. The specific objectives of the Systems Priority Study were to:

- Review the recommendations of the three Metro/T.T.C. Feasibility Studies and establish the relative need for implementation of all three projects;
- Develop a number of affordable alternative implementation scenarios for developing the proposed expanded rapid transit network;
- Assess the alternative scenarios on the basis of how they respond to future transportation needs and strategic development objectives;
- Establish an implementation program for expansion of the rapid transit system in Metro; and

- o Develop concurrent implementation details for the three corridors to resolve near term operational problems in corridors for which rapid transit is postponed until later in the implementation program.

The results of this study were reported in Network 2011: A Rapid Transit Plan for Metropolitan Toronto.

The Network 2011 report included an assessment of the results of the individual feasibility studies from a network perspective and proposed a staged program for the implementation of the recommended rapid transit network for Metropolitan Toronto to the year 2011.

The Network 2011 Report proposed a 28 year rapid transit construction program in five stages of 5-6 years each. After the initiation of Stage 1, the program provides for a review of each subsequent stage. At such times, Metro and T.T.C. staff are to re-assess the balance of the program using more current information and recommend to Council future action for the next stage. The five stages of the program as proposed in 1985 were:

Stage 1	1989-1993(a)	- Sheppard Subway - Yonge to Victoria Park plus reserved bus lanes to Scarborough City Centre
Stage 2	1994-1998	- Downtown Relief Line
Stage 3	1999-2003	- Eglinton West transit facility (Busway or rapid transit technology to be confirmed)(b)
Stage 4	2004-2009	- Sheppard Subway-Victoria Park to Scarborough City Centre and Yonge to Allen Road - Spadina Subway extension to Sheppard Avenue

Stage 5	2010-2014	- Eglinton West upgrading to rail (Assuming busway implemented in Stage 3)

Notes:

(a) The construction of the Harbourfront/Spadina LRT has been assumed in the period 1987-1988. The Harbourfront/Spadina LRT, which is an expansion of the downtown transit distribution network, has not been evaluated as part of the Systems Priority Study.

(b) Depends on level of demand established by Mississauga busway.

The above recommended program requires an average expenditure of $95-$100 million (1985 $) per year, 25% of which would be funded by Metropolitan Toronto. A recent report by the Metropolitan Chief Administrative Officer has confirmed that Metropolitan Toronto can afford the Network 2011 program as well as other transit replacements and refurbishments, and various road improvements recommended in recent studies for Metro.

The Network 2011 report also outlines the benefits to be achieved as a result of the implementation of this program and the rationale for the priority recommendations and sets out detailed proposals for interim measures to maintain acceptable transit service levels until the recommended rapid transit projects can be completed.

B. Submission to the Economic Development and Planning, and Transportation Committees

The Network 2011 Report, along with eight background reports on the individual rapid transit studies, was submitted to a joint meeting of the Economic Development and Planning Committee and Transportation Committee held on May 29, 1985.

The Committees received the reports and directed that:

1. These reports be circulated to Area Municipalities, the Toronto Transit

Commission and the Minister of Transportation and Communications, (and be made available to other concerned groups and agencies), with a request for comments by November 15, 1985, such comments to be submitted to the Metropolitan Toronto Planning Department.

2. The report be circulated to the Regional Municipalities of Peel, York, Durham and Halton, and to GO Transit for information.

3. Staff be authorized to proceed with a series of Public Information Centres to explain to the public the results of the three rapid transit feasibility studies and the Systems Priority Study.

4. Staff be directed to review all written responses to these reports and report back in respect thereof to a joint meeting of the two Committees in February, 1986; at such meeting, staff to present final recommendations regarding these reports including appropriate actions to implement the recommended program.

At the March 5, 1986 meeting of the Economic Development and Planning Committee, the Commissioner of Planning reported on the status of the Area Municipal responses and concluded that, due to delays in receiving all the responses, the earliest date that Metropolitan and T.T.C. staff could report back was April 30, 1986. Further delays on the receipt of responses and the need to conduct additional technical analyses has necessitated a June, 1986 response from Metropolitan and T.T.C. staff.

C. Public Information Program

The Network 2011 Public Information Program was undertaken to provide the general public with an opportunity to review and comment on the findings and conclusions of the Network 2011 report and the three rapid transit feasibility studies. In addition, public information programs were conducted for the three individual rapid transit studies prior to the release of the Network 2011 report.

The Network 2011 public information program consisted of the following:

(i) A newspaper insert, distributed to approximately 500,000 homes, containing information on and soliciting comments about the Network 2011 strategy, and advertising the public information centres;

(ii) advertising on board all T.T.C. vehicles announcing the information centres and soliciting comments from the public.

(iii) provision and advertisement of a direct telephone line to the Metro Planning Department for public comment or questions about the strategy; and

(iv) public information centres at which T.T.C. and Metro Planning staff were present to explain the proposals and to answer questions. The public information centres were conducted at the following locations:

Toronto City Hall:	October 8, 1985
Scarborough Civic Centre:	October 8, 1985
North York City Hall:	October 9, 1985
Etobicoke Civic Centre:	October 9, 1985
York Municipal Office:	October 10, 1985
East York Municipal Office:	October 10, 1985

In addition to the formal public information program, staff from the T.T.C. and the Metro Planning Department attended numerous open houses and public forums on Network 2011 sponsored by the local Municipal Councils and other interested parties.

D. Responses to Network 2011

Responses to the proposed Network 2011 strategy have now been received from:

- Councils of 5 of the 6 area municipalities (the City of Toronto staff report was to be considered by City Council on May 20, 1986)
- Councils of the Regional Municipalities of Durham, Peel and York;
- Councils of the City of Mississauga and the Town of Markham;
- The Metropolitan Toronto Board of Trade and the Toronto Redevelopment Advisory Council;
- Other Agencies, primarily Federal and Provincial Ministries and Boards of Education (listed in Appendix 2); and
- Members of the general public.

To date, responses have not been received from either the Ministry of Transportation and Communications or GO Transit.

The purpose of this report is to describe the content of the above submissions and address the major concerns raised in the responses. The report evaluates the respective positions of the submissions received and presents Metropolitan Toronto's response to the issues raised in these positions. Further, conclusions are made which indicate a need to modify the Network 2011 strategy, as originally recommended.

II OVERVIEW OF RESPONSES

The following are brief overviews of the responses received on the Network 2011 report recommendations. The respective Council resolutions and issues raised in the staff reports are presented in Appendix A "Extracts from Area Municipality Responses and List of Major Issues Raised". A list of other responding Agencies is provided in Appendix B. A copy of the consultant's report on the Public Information Progam, a background paper to this study, is on file with the Metropolitan Clerk's Department and is available for review at the Metropolitan Planning Department.

A. Metropolitan Toronto Area Municipalities

1. Borough of East York

The Borough of East York Council supports the Downtown Relief Line as the first and highest priority for new rapid transit in Metro; in addition, East York supports the extension of the DRT from Danforth Avenue to the Thorncliffe Park area of East York.

In the event that Metro Council proceeds with another rapid transit line as the first priority, East York requests that Metro Council make a commitment to construct the DRT within the time frame proposed in the Network 2011 report or earlier, if possible, and to implement interim relief measures during the intervening period.

The Borough of East York position, as stated in a report from the Commissioner of Planning and Development, adopted by Council at its meeting of March 17, 1986, is based on the opinion that the interim surface relief measures recommended in the Network 2011 report may not successfully off-load passengers from the Yonge Subway line and, therefore, increased crowding on the Yonge Subway can be expected to occur in the near future. East York maintains that early construction of the DRT would be required to alleviate the crowding on the Yonge Subway.

2. City of Etobicoke

The City of Etobicoke Council recommends that the construction of the Eglinton West Rapid Transit Line not be delayed beyond the mid 1990's and that the preferred choice of technology for the line is subway rather than busway.

In addition to their position with respect to the EWRT, Etobicoke Council also recommends that a mechanism be set up with the Region of Peel to monitor travel, both by auto and transit, across the West Metro boundary.

Etobicoke Council also requests that the selection of a yard site to serve the DRT commence immediately, in order that the Westwood Theatre site in the Kipling/Islington Centre may be released for development at the earliest possible date. Further, Etobicoke does not wish taxpayers' capital dollars to be spent on the construction of the Harbourfront LRT and recommends that funding should be sought from other sources.

The City of Etobicoke's position, adopted by Council on September 23, 1985, is based on observations with respect to a projected capacity deficiency on the Bloor-Danforth Line occuring by the mid-1990's, increased population and employment in the Region of Peel which will increase cross-boundary travel flow through Etobicoke and the limited opportunities available to accommodate the travel through improved GO services or improved road capacity. The cumulative effect of all of these factors is the increasing need to provide an alternative rapid transit line to the Bloor-Danforth Subway that would serve the cross-boundary traffic flows at the earliest possible date.

3. City of North York

The Council of the City of North York endorses the Network 2011 strategy, as proposed, which provides for the construction of the Sheppard Subway between Yonge Street and Victoria Park Avenue as the first priority. This position was adopted by Council at its meeting of March 24, 1986.

4. City of Scarborough

The Council of the City of Scarborough requests:

- o that Metropolitan Toronto Council establish, as the first priority, the construction of the entire Sheppard Subway line from an extended Spadina Subway to the Scarborough City Centre and, further, that the proposed Downtown Rapid Transit Line be deferred until, at least, the completion of the full Sheppard Subway from the Spadina Subway to the Scarborough City Centre;
- o that Metropolitan Council support incremental improvements to GO Transit services and measures for increased fare and service integration of T.T.C., GO and other transit services in the Regions, as a means of serving the projected increase in travel between the surrounding regions and Metropolitan Toronto;
- o that the circumferential rapid transit concept described in the 1983 T.T.C. Long Range Plan be the basis for establishing future priorities for rapid transit lines; and
- o that Metropolitan Toronto participate in a joint Metro/Scarborough study of transit options for the Malvern Transportation Corridor, such a study to be completed within six months time.

The City of Scarborough's position, adopted by Council at its meeting of February 24, 1986, is based on a staff report which reviewed the DRT ridership estimates for both 2001 and 2011 and determined that the existing transit network serving the Central Area, with service improvements to GO Transit, will have sufficient capacity to serve the anticipated growth in Central Area destined travel until at least the year 2011 . The Scarborough report concluded that, since improvements to GO Transit services would not only defer the need for the DRT, but would also reduce the cross-boundary travel flow across the Peel/Metro boundary on local transit, the timing of the need for the EWRT Line becomes less certain and, therefore, the complete Sheppard Line, which serves two major Metropolitan centres, could be completed as one continuous project.

5. City of Toronto (Staff Position)

The City of Toronto staff report submitted to the City Services Committee on May 6, 1986, recommended that City Council recognize the Sheppard and Eglinton Corridors as priorities in need of improved transit services and the decisions on the form of these improvements should be made within the context of an established Provincial position on affordability and the relationship to regional planning strategies.

The City staff report also endorses the Downtown Relief Line as the second priority, as recommended in the Network 2011 report. It also suggests that this option be thoroughly reviewed in 1992 as part of the 5-year review process. It is recommended in the staff report that the DRT follow the Wellington Street alignment as opposed to the Front Street/Railway Corridor alignment recommended in the DRT study.

City staff support the interim transit improvements to serve the Central Area (i.e. Spadina/Harbourfront LRT, Sherbourne Express Bus, Yonge and Bloor station improvements) recommended in Network 2011.

The report also recommends the integration of services and fares on the GO and T.T.C. systems to provide better co-ordinated and more attractive inter-regional transit services.

City of Toronto Council was to consider this staff position at its meeting held on May 20, 1986.

6. City of York

The City of York recommends:

- that the Eglinton West Rapid Transit Line be given a higher priority in the phasing of Network 2011, and that it be constructed in its entirety along the Eglinton Avenue alignment using rail technology, staged as follows:
  - (i) Spadina Subway to Scarlett Road (underground in the City of York between the Spadina Subway and Weston Road); and
  - (ii) Scarlett Road to Renforth Drive
- that the references to the use of the Teperman/Westside Mall site for a potential transit yard site be deleted from the EWRT study, and that the priority review process outlined in Network 2011 not be tied to five year periods, but be open to earlier review should circumstances warrant.

The City of York also requests that a joint Provincial/Metro/GO Transit/T.T.C. study be undertaken to examine the feasibility of upgrading the Richmond Hill GO rail line to full bi-directional service and to examine the implementation of full service and fare integration between the T.T.C., GO and the regional/local transit operators.

The City of York staff position, adopted by Council at its meeting of March 14, 1986, concludes that the EWRT Line should have a higher priority in the phasing of rapid transit expansion based on the following:

- forecast increase in travel across the Metro/Peel boundary with limited opportunities for road capacity expansion;
- GO Transit cannot adequately serve the 75% of cross-boundary trips that are not destined to the Central Area;

- Network 2011 is insensitive to the planning and development objectives of the City of York;
- Deficiencies in the modelling techniques used in Network 2011 underestimate cross-boundary transit forecasts;
- additional rapid transit is not urgently required to serve the North Yonge Centre or the Scarborough City Centre;
- improvements to north-south GO Transit services would defer the need for the DRT; and
- the EWRT would increase service accessibility to the greatest number of new riders.

B. Responses from Other Metropolitan Toronto Agencies

1. Metropolitan Toronto Board of Trade

The Board of Trade in a report dated February 7, 1986, advises that practical low cost alternatives, such as surface bus services in reserved lanes, would serve the demand in all three rapid transit corridors and that this option would be a more appropriate low cost alternative to spending billions of dollars on a rapid transit program where need has not been adequately proven. In addition, the Board suggests that improved GO Transit and suburban regional transit could serve a greater role in accommodating cross-boundary travel demand. The Board also advises that transit should be located based on the projected demand and as such, transit in the Eglinton West Corridor should be the first priority.

The Board of Trade also urges that public transit improvements be viewed in the context of the overall Metropolitan transportation network and that consideration must be given to improvements to the road network to assure a better level of service on Metro's surface transit system.

2. Toronto Redevelopment Advisory Council

In a letter to the Metropolitan Chairman dated April 22, 1986, the Toronto Redevelopment Advisory Council (RAC) state that they are not convinced that Network 2011 is necessary, although they admit that it may have potential merit. The RAC believes that the area surrounding Metro should be given priority for improved transit services since most of the population and employment growth in the next 25 years will occur there. Transportation accessibility to the surrounding Regional Municipalities should therefore be improved as the first priority. However, the RAC does argue that rail rapid transit in the longer term would help enhance the development of the North York and Scarborough City Centres. They also agree that the DRT is of lesser priority.

The RAC is strongly supportive of reasonable expeditures in the transportation sector. Their view is that GO Transit, Highway 407 and Metro road improvements are required, whereas some of the Network 2011 facilities are not really necessary but "would be nice to have".

C. Neighbouring Regional and Local Municipalities

1. Regional Municipality of Durham

The Regional Municipality of Durham forwarded a report by their Commissioner of Planning which had been received by Council on September 11, 1985, for their information. The Commisioner of Planning noted in his report that only the Eglinton West Rapid Transit Study dealt with cross-boundary travel and that, from the Region of Durham's perspective, it would be preferable that the section of the Sheppard Subway east of Victoria Part be completed sooner than recommended in Network 2011.

2. Regional Municipality of Peel

The Council for the Region of Peel recommends that the Ministry of

Transportation and Communications (MTC) be requested to form a committee of representatives from the MTC, Metropolitan Toronto, T.T.C., Mississauga, Etobicoke, York and Peel to review the Network 2011 proposals, with specific attention to the proposed priority of the Eglinton West Rapid Transit Line, and that MTC be requested not to take a position with respect to the Network 2011 proposals until this committee has completed its review.

The Council also forwarded a copy of the Regional Planning staff report entitled "The Urgent Need for the Eglinton West Rapid Transit Line" for the information of Metropolitan Council.

Peel's report, adopted by Council on October 24, 1985, reviews the past and present trends in travel demand cross the Metro/Peel boundary and concludes that, based on projected population and employment levels for Peel and Metro, increased cross-boundary travel can be expected to occur. The report also notes that there are physical constraints at the Metro/Peel boundary which limit expanding road capacity across the boundary; as a result, increased transit capacity is required to facilitate a shift from auto to transit so that future cross-boundary travel flows can be accommodated.

The report further documents the benefits of the EWRT and raises the following issues:

- the Metropolitan Toronto Transportation Plan Review (1975) concluded that an Eglinton Avenue corridor transit facility was the preferred east-west rapid transit route;
- the EWRT serves more than twice the area per unit length of line than would the Sheppard line and at a lower cost;
- the North York and Scarborough City Centres are served directly by the existing rapid transit network while the Mississauga City Centre has not yet been connected to the network;
- detailed feasibility studies of upgrading the Stouffville and Richmond Hill GO services are required to determine if these services could

better serve part of the market proposed to be served by the Sheppard Line and the Downtown Rapid Transit Line;

- estimates of ridership on the Sheppard Line are overstated and the Sheppard Line would not contribute to a modal shift to transit as significantly as the EWRT; and
- the DRT, which is inconsistent with the Metropolitan Official Plan, is an expensive solution for the relief of the Yonge Line crowding problem and may only result in a shift of the problem from the Yonge Subway to Union Station.

The Council for the Region of Peel also adopted, at its meeting of April 10, 1986, a resolution requesting that Metro and MTC seriously review the submission of the Metropolitan Toronto Board of Trade.

3. Regional Municipality of York

The Council for the Region of York in a previous joint position with the Towns of Markham, Richmond Hill and Vaughan identified the Finch hydro right-of-way as their preferred location for an east/west rapid transit facility north of Highway 401. As such, the Region of York is opposed to the Sheppard alignment on the basis that it would make the implementation of a future rapid transit line in the Finch hydro right-of-way financially and operationally impractical.

The Region also urges the MTC to subsidize an east/west line only if it is in the hydro right-of-way, but if a decision is made to proceed with the Sheppard Subway, MTC should develop an augmented inter-regional rapid transit plan to serve the Region of York and that an interim scheme might be a busway in the Finch hydro right-of-way.

4. City of Mississauga

The City of Mississauga endorses that part of the Network 2011 program which supports the Mississauga busway, connecting initially to the Bloor Subway and ultimately to the Eglinton West Rapid Transit Line.

However, Mississauga Council, in a position adopted on September 23, 1985, is concerned that the present schedule for the completion of the EWRT will not serve the projected growth in cross-boundary travel expected to occur before the completion of the EWRT and therefore, Mississauga requests that the EWRT be completed from the Spadina Subway to Renforth Drive by the mid-1990's using a design that will be consistent with the proposed Mississauga Busway.

Mississauga also noted an apparent difference in the 2011 employment forecasts for the City of Mississauga used in the Mississauga Transportation Study and Network 2011 and the City requests that Metropolitan Toronto and the T.T.C. review the employment assignment for Mississauga.

5. Town of Markham

The Council of the Town of Markham, at its meeting held on April 8, 1986, endorsed the position of the Regional Municipality of York opposing the Sheppard Avenue alignment as the location of an east/west rapid transit line north of Highway 401.

D. General Public Responses

1. The Public Information Program

The comments from the public at the information centres were generally supportive of the recommendations and the Network 2011 strategy, with approximately 84% of all comments being positive in nature.

Approximately 50% of the comments supported the overall plan, the individual lines and vehicular technologies proposed, while 13% wanted the network to be built faster than the recommended time table. An additional 10% of comments indicated that the priority of the lines, mainly the Downtown Relief Line and the Eglinton West Rapid Transit Line, should be changed in order that the lines be built earlier. The remaining positive comments recommended rapid transit expansions beyond those proposed.

The 16% of comments which were negative were equally split between being non-supportive of the Network 2011 plan in general and being in disagreement with the proposed routings or proposed vehicle technologies.

Detailed results of the Public Information Program are summarized in Marshall Macklin Monaghan's report "Network 2011 Public Information Program: Documentation Report", a background report to this study.

2. Submissions to the Metropolitan Planning Department

Four written submissions from the general public were received by the Metropolitan Planning Department. Staff discussed the submissions with the respondents or provided written comments on their submissions. Two of these submissions proposed alternative network configurations, mainly to increase service from the northeast to the Central Area, the remainder lent support to the implementation of specific lines earlier than proposed in Network 2011.

3. Network 2011 Telephone Line

A direct telephone line for information on Network 2011 was in operation between October 1 and December 15, 1985, during which time approximately 110 calls were received. The majority of these telephone calls were requests for additional information on the Network 2011 strategy or requests for clarification of specific aspects of the program.

E. Directives from Metropolitan Council and the Transportation Committee

Subsequent to the submission of the Network 2011 report to the May 29, 1985 joint meeting of the Economic Development and Planning and Transportation Committees, the following resolution regarding the Westwood Theatre site was adopted by Metropolitan Council on March 4, 1986 in conjunction with the approval of the T.T.C. portion of the 1986-1991 Capital Works Program:

"It is further recommended that:

(a) approval of the expenditure of $3,100,000.00 for Item No.23 - Toronto Transit Commission Downtown RT be given on the clear understanding that it does not indicate Metropolitan Council's approval or commitment of the Downtown Relief Line;

(b) such monies be allocated specifically for the purchase of lands to replace the Kipling Yard lands which will be released to the City of Etobicoke at such times as these lands are declared surplus to the requirements of the Metropolitan Corporation, and that the City of Etobicoke be so advised in order that it can proceed with the planning of its City Centre;

(c) the General Manager, Toronto Transit Commission, be requested to report thereon to the Transportation Committee in twelve months time; and

(d) the General Manager, Toronto Transit Commission, be requested to begin now to search for alternative locations for the Kipling Yards."

It should be noted that the Transportation Committee had before it at its meeting of February 3, 1986 a communication from the Assistant General Secretary, Toronto Transit Commission, forwarding, for information, a report received by the Commission on December 3, 1985, entitled "Queen's Quay LRT - West of Spadina Avenue to the Canadian National Exhibition", which contained a recommendation of Commission staff that the extension of the Queen's Quay LRT west of Spadina Avenue not be included in the T.T.C's Long-Range Plan. The Committee concurred with a request of the Task

Force on Future Uses of Exhibition Place that the T.T.C. take no further action on the aforementioned report and continue to consider the extension of the Queen's Quay LRT west of Spadina in the T.T.C's Long Range Plan and directed that the T.T.C. be advised accordingly.

At its meeting of March 25, 1986, the Toronto Transit Commission agreed to make accommodations in their budget for this facility and to consider it in future reviews of Waterfront transportation needs, in the context of future uses at Exhibition Place.

F. The Major Issues

Based on a review of the summary of responses as shown in Exhibit A.1 in Appendix A, the major issues raised by the respondents to the Network 2011 report can be categorized into the following areas:

(i) Land Use and Development Objectives;
(ii) The Role of GO Transit;
(iii) The West Metro Boundary;
(iv) The Central Area; and
(v) Network Priorities.

This report considers each of these major issues in turn, outlining which municipalities commented on an aspect of the issue, detailing new information or analysis conducted to address the issue and presents conclusions drawn based on the new information.

III. LAND USE AND DEVELOPMENT OBJECTIVES

A. Introduction

The Cities of Etobicoke, Scarborough, Toronto and York and the Regional Municipality of Peel all commented on how changes in the 2011 land use projections affect the 2011 travel demand forecasts and how these changes would result in modifications to the proposed staging of the Network 2011 recommendations. A new land use forecast for the year 2011, developed by the Metropolitan Planning Department Research Division after the release of the Network 2011 report, has been used as the basis for a re-examination of the travel demand forecasts for 2011.

B. Population and Employment Forecasts

The critical components of future travel demand forecasting for Metropolitan Toronto are the future estimates of population and employment for the Greater Toronto Area (G.T.A). Three land use forecasts have been used recently to forecast travel demand in the G.T.A.:

	Name	Source	Date
(i)	GO-ALRT 'A'	(Toronto Area Liaison Committee)	May, 1983
(ii)	Peel	(Mississauga Transportation Study)	June, 1983
(iii)	M1-85	(Metro Planning Research Division)	November, 1985

The GO-ALRT 'A' forecast was developed in 1983 by the Toronto Area Liaison Committee for use in the Province's GO-ALRT studies and was subsequently used in the Network 2011 study. The GO-ALRT 'A' forecast is a compilation of regional aspirations and is generally considered to be, in aggregate, an optimistic projection of future land use for the G.T.A.

The land use forecast developed by the Region of Peel and used in the Mississauga Transportation Study projects lower population and higher employment levels for Peel than does GO-ALRT 'A'. This forecast may be seen as the ultimate level of development anticipated for the Region, but it is not considered by Metro staff to be a realistic estimate for the year 2011.

The M1-85 land use forecast, which was developed by the Research Division of the Metropolitan Planning Department after the Network 2011 study, forecasts future population and employment based on underlying demographic factors. This forecast predicts lower population and employment in most areas of the G.T.A., the most important exception being the Toronto Central Area (Planning District 1), where both population and employment are projected to be higher than GO-ALRT 'A' levels.

Appendix C, "Summary of Updated Demand Analysis", details the GO-ALRT 'A' and M1-85 land use forecasts, summarizes how they are used in the Metro travel demand model to determine future travel projections and compares the travel demand estimates forecast using the GO-ALRT 'A' and M1-85 land use estimates. Exhibit 3.1 illustrates the differences between the GO ALRT 'A', Peel and M1-85 land use forecasts.

Although the land use scenarios indicate different levels of population and employment for the G.T.A., the scenarios represented, at the time produced, the 'best' estimate by the originating agency. However, because the land use forecasts are the critical components of the travel demand forecasting technique, changes in the assumed land use will ultimately be reflected in the travel demand estimates.

C. Network 2011 Travel Demand Forecasts

Forecasts of travel demand for the year 2011 were generated using the GO-ALRT 'A' land use in the Network 2011 study. In response to the comments of the area municipalities regarding the revised land use forecasts, a new forecast of 2011 travel demand was generated using the M1-85 land use.

The effect of the M1-85 land use is a reduction of simulated demand on most parts of the rapid transit system for both the Base Case network, illustrated n Exhibit 3.2, and the System 3 network, illustrated in Exhibit 3.3.

Changes to the simulated ridership on the proposed rapid transit lines range rom reductions of 5% to 15%, with the exception of the Yonge Subway which hows virtually no change in simulated demand at its peak point south of Bloor Street. The magnitude of these reductions does not change the Network 2011 study conclusion that rapid transit facilities will still be required in each of the three corridors. Furthermore, the revised forecasts do not indicate a change in the priorities recommended in the Network 2011 strategy, although t may suggest a modification to the time period for implementation of the ecommended improvements.

One further land use scenario was suggested in the City of Scarborough esponse to the Network 2011 strategy, in which the M1-85 land use was evised to reflect a slow-down in the growth of the Central Area (P.D.1). The growth that had been assigned to P.D.1 in the M1-85 land use was re-ssigned in this scenario to the suburban areas of Metro and the surrounding Regions. The net effect of this new land use was a significant reduction in Central Area destined trips compared to that predicted with the M1-85 land se forecast. However, like the Peel land use scenario used in the Mississauga Transportation Study, the land use scenario proposed by the City f Scarborough reflects more the local aspirations of the municipality. While possible, these forecasts are not considered probable, based on the resent and future level of development activity in the Central Area.

Metro staff are confident that the M1-85 land use reflects the best estimate f future land use based upon currently available information. That is not to ay that conditions will not change over time; however, the best approach to he uncertainty that all forecasts embody is to monitor these conditions and pdate the land use forecasts accordingly. The revised land use could then be sed in the five year review process proposed in the Network 2011 strategy to produce new ridership projections which could then be used to determine the next priority for rapid transit expansion.

D. Development Objectives

The fundamental aim of the Metropolitan Official Plan is to create a multi-centred urban structure achieved through the development of Metropolitan employment centres located along rapid transit lines. In this plan the Central Area of the City of Toronto will remain the pre-eminent centre in the Metropolitan Region, while the Etobicoke, North York, and Scarborough City Centres (and the Mississauga City Centre in Peel) will complement the Central Area by providing alternative locations for residential and employment growth.

. Expansion of the Metro rapid transit system is justified primarily on the basis of supporting continued employment growth in Metropolitan Toronto, a large portion of which will occur in the Metropolitan Centres and the Central Area. System expansion is also justified on the basis of improving overall transit accessibility in the suburban Metropolitan areas. These policies are consistent with the basic transportation objectives of the Metropolitan Official Plan (specific references in parenthesis):

- to improve transit accessibility and mobility throughout Metro and particularly in suburban areas, (6.B.1);
- to provide adequate transportation services to support the employment growth of the Central Area, (6.B.2); and
- to emphasize transit and arterial road accessibility to each designated Centre (6.B.3)

As such, the Network 2011 strategy is consistent with the overall aim of the Metropolitan Official Plan and with its specific objectives.

The timing of the elements of the Network 2011 plan have been criticized for undermining the basic objective of the Metropolitan Official Plan, especially the proposed second priority of the DRT. Network 2011 clearly reinforces the concept of decentralization by significantly improving transit accessibility to the North Yonge Centre through the implementation of the first phase of the Sheppard Line from Yonge to Victoria Park and, to a lesser extent to the Scarborough City Centre by reserved bus lanes from Victoria Park to the City Centre. The timing of the DRT is very much conditional on the extent to which the proposed surface transit relief measures and possible improvement to GO rail services relieve crowding on the existing subway lines serving the Central Area and on the rate of Central Area employment growth. If the above transit improvements are implemented and are successful, the five-year review process will be able to re-assess the timing of the need for the DRT.

The City of York has stated that the lower priority assigned to the Eglinton West Rapid Transit Line ignores the planning and development objectives of York in favour of North York and Scarborough. Metro staff are in full agreement with the City of York that a rapid transit facility would assist the re-development of certain locations along Eglinton Avenue; however, the fiscal constraints of constructing rapid transit dictate that it be located first in areas where the maximum benefit can be derived at the earliest point in time. The Sheppard Line clearly serves, from a Metropolitan perspective, a far greater potential than the EWRT and, therefore, based on development objectives, Sheppard must rank higher in priority.

The City of York and the Region of Peel also noted that the Mississauga City Centre is not connected by rapid transit to the Metropolitan system, whereas both North York and Scarborough City Centres are already connected. Network 2011 supports the early connection of Mississauga City Centre with the Metro rapid transit system via the proposed Highway 403 Mississauga Busway, initially using Highway 427 and Dundas Street to Kipling Station and ultimately via a connection to the EWRT.

The Cities of York and Etobicoke both commented on specific development sites in their respective cities that would be affected by the Network 2011 recommendations. In the City of York, the Teperman/Westside Mall site was identified in the EWRT study as a possible future rapid transit yard site. Further investigation of the yard requirements of the EWRT has determined that this site is no longer desirable and a preferred site has been identified in the Airport area. In the City of Etobicoke, the Westwood Theatre site is designated as a future yard site, which could be released for development purposes if a yard site that can serve the DRT is acquired. Metropolitan Council has directed the T.T.C. to investigate, and report back on the acquisition of a yard site for the DRT. Upon acquisition of a yard site for the DRT, the Westwood Theatre site would be released for the further development of the Kipling/Islington Centre.

E. Summary

The M1-85 land use forecast results in reductions in the simulated 2011 A.M. peak hour ridership forecasts for the three recommended rapid transit lines. The magnitude of the reductions are not significant enough to warrant changes to the Network 2011 recommendations. However, the new forecasts raise some questions that can best be answered during the first five year review process when additional, updated information will be available to further assist the transit demand forecasting process.

Network 2011 supports the aim and objectives of the Metropolitan Official Plan by supporting decentralization to the major Metropolitan Centres and by recognizing the need to continue to provide the Central Area with adequate transportation services.

The Network 2011 strategy recognizes that the local planning objectives of each of the area municipalities (and surrounding Regions) could be enhanced by the early provision of rapid transit. However, fiscal constraints dictate that priorities must be set and the emphasis for the staging of the rapid transit expansion in Metropolitan Toronto must be based on Metropolitan objectives and transportation needs. Interim improvements are recommended as warranted in the corridors not designated as the first priority until rapid transit can be provided.

Exhibit 3.1
Comparison of Land Use Forecasts

Population

	1984	2011		
	Actual	GO-ALRT'A'	Peel	M1-85
Metro Toronto	2,137,441	2,247,500	2,247,500 (0)	2,188,800 (-58,700)
Central Area (P.D.1)	112,347	141,700	141,700 (0)	183,700 (+42,000)
Inner Suburban Area (Humber River, Hwy.401,Uxbridge Sub.)	1,049,233	1,059,000	1,059,000 (0)	986,700 (-72,300)
Outer Suburban Area (Metro Boundary)	975,861	1,046,800	1,0146,800 (0)	1,018,400 (-28,400)
Peel/Halton	629,761	1,408,900	1,339,100 (-69,800)	1,258,500 (-150,400)
York	231,855	616,600	616,000 (0)	539,700 (-76,300)
Durham	63,229	126,000	126,000 (0)	152,100 (+26,100)
Total Toronto C.M.A.	3,062,286	4,398,400	4,328,600 (-69,800)	4,139,100 (259,300)

Employment

	1984	2011		
	Actual	GO-ALRT'A'	Peel	M1-85
Metro Toronto	1,145,612	1,502,100	1,500,900 (-1,200)	1,433,100 (-69,000)
Central Area (P.D.1)	361,843	458,300	445,600 (-12,700)	470,700 (+12,400)
Inner Suburban Area (Humber River (Hwy.401, Uxbridge Sub.)	361,349	471,900	480,800 (+8,900)	437,800 (-34,100)
Outer Suburban Area (Metro Boundary)	422,420	571,900	575,500 (+2,600)	524,600 (-47,300)
Peel/Halton	307,825	641,800	725,600 (+83,800)	559,100 (-82,700)
York	101,700	271,000	271,600 (+600)	227,700 (-43,300)
Durham	21,510	51,300	51,300 (0)	41,400 (-9,900)
Total Toronto C.M.A.	1,576,647	2,446,200	2,549,400 (+83,200)	2,261,300 (-204,900)

Note: 1. Numbers in parentheses indicate difference with GO-ALRT 'A' forecast.
2. 1984 figures for Peel/Halton do not include zones 25 and 26 (Oakville,Milton)
3. Includes population and employment within the Toronto C.M.A.

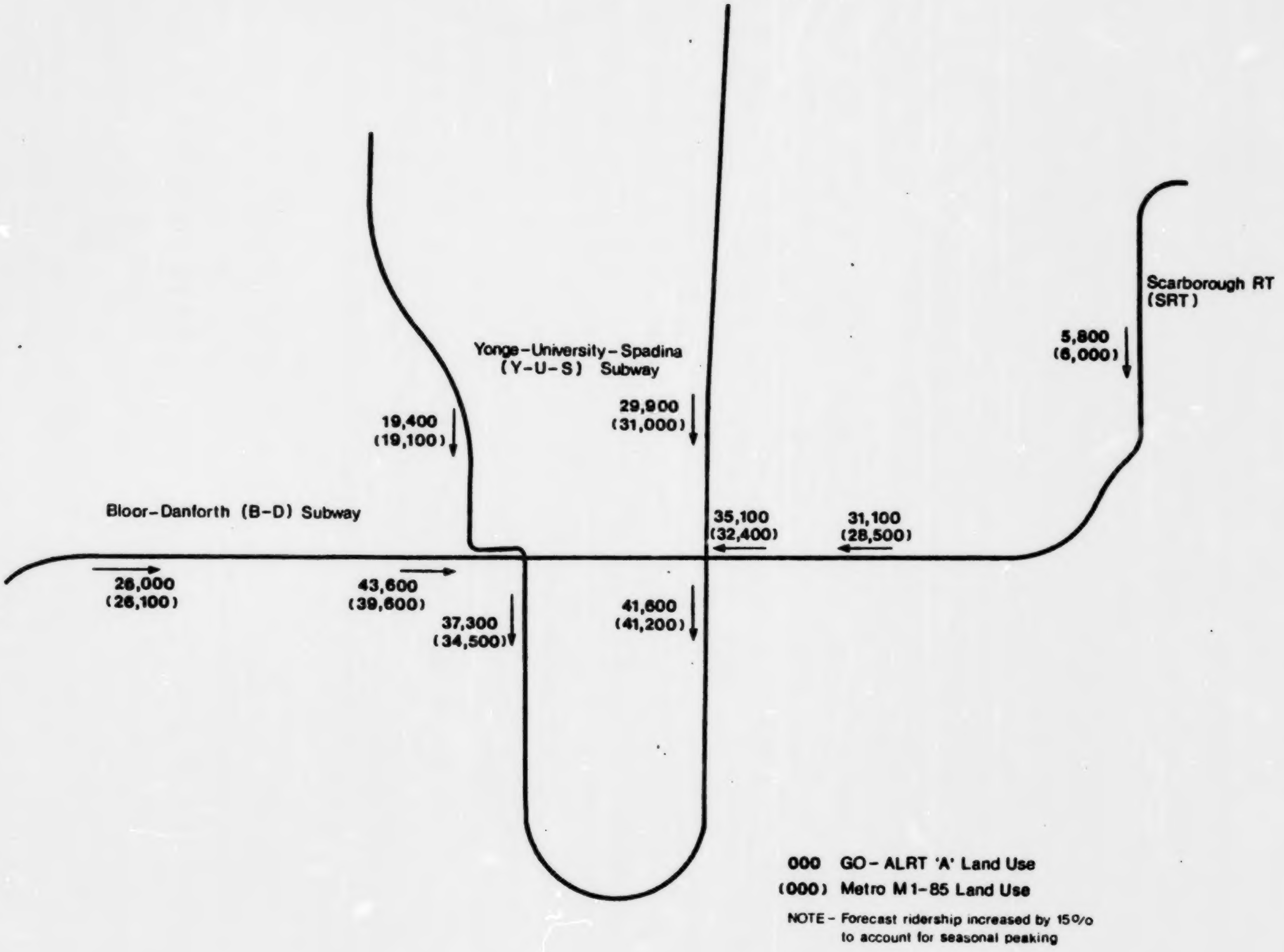
Yonge-University-Spadina
(Y-U-S) Subway
Scarborough RT
(SRT)
5,800
(6,000)
19,400
(19,100)
29,900
(31,000)
Bloor-Danforth (B-D) Subway
35,100
(32,400)
31,100
(28,500)
26,000
(26,100)
43,600
(39,600)
37,300
(34,500)
41,600
(41,200)
000 GO-ALRT 'A' Land Use
(000) Metro M1-85 Land Use
NOTE - Forecast ridership increased by 15% to account for seasonal peaking

EXHIBIT 3.2

FORECAST A.M. PEAK HOUR 2011 RIDERSHIP FOR EXISTING (SYSTEM B) NETWORK

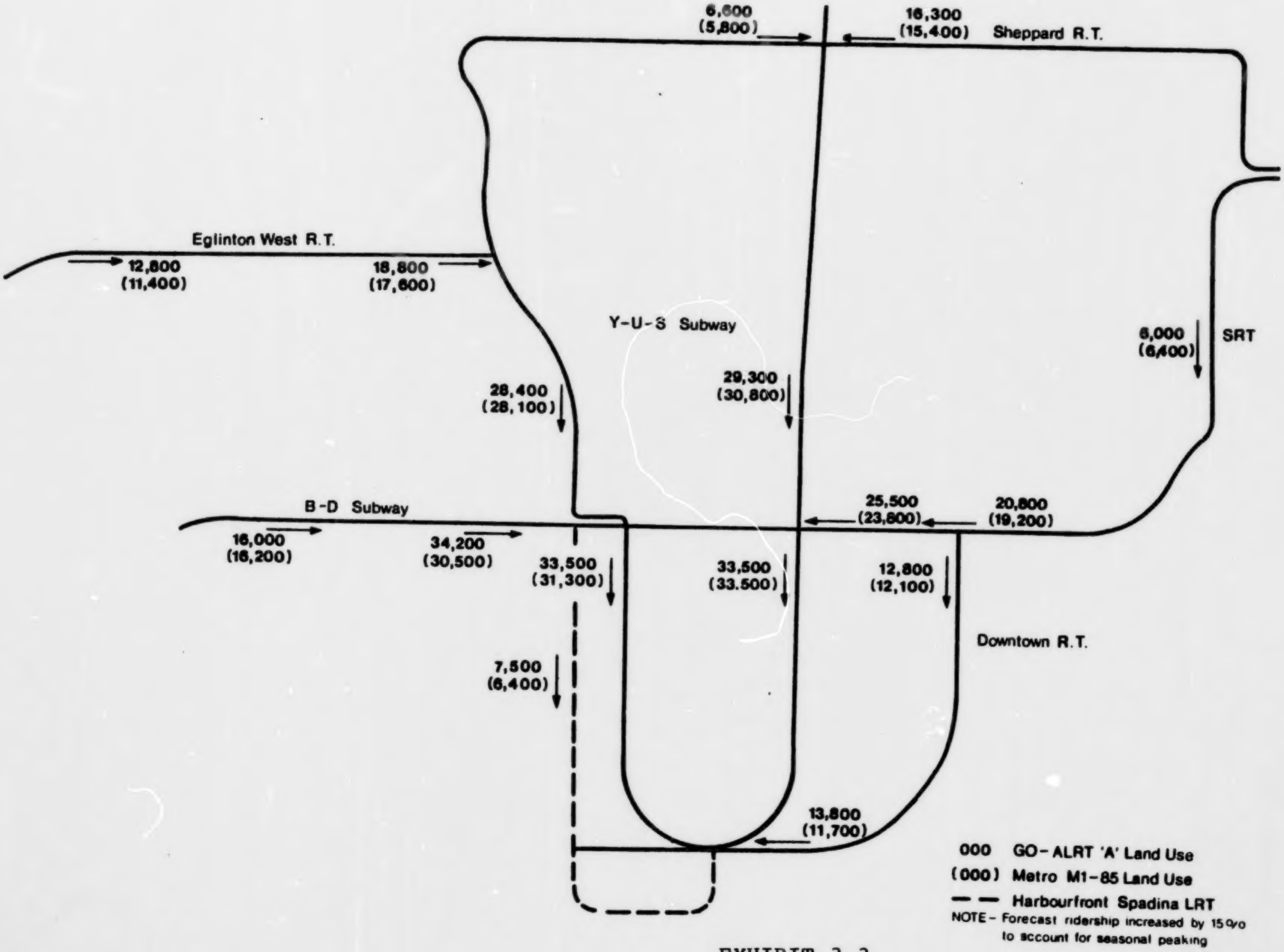
6,600
(5,800)
16,300
(15,400)
Sheppard R.T.
Eglinton West R.T.
12,800
(11,400)
18,800
(17,600)
Y-U-S Subway
6,000
(6,400)
SRT
28,400
(28,100)
29,300
(30,800)
B-D Subway
25,500
(23,600)
20,800
(19,200)
16,000
(16,200)
34,200
(30,500)
33,500
(31,300)
33,500
(33.500)
12,800
(12,100)
Downtown R.T.
7,500
(6,400)
13,800
(11,700)
000 GO-ALRT 'A' Land Use
(000) Metro M1-85 Land Use
— — Harbourfront Spadina LRT
NOTE - Forecast ridership increased by 15% to account for seasonal peaking

EXHIBIT 3.3

FORECAST A.M. PEAK HOUR 2011 RIDERSHIP FOR EXPANDED (SYSTEM 3) NETWORK

IV THE ROLE OF GO TRANSIT

A. Introduction

The Cities of Etobicoke, Scarborough, Toronto and York and the Regional Municipality of Peel commented that the Network 2011 report underestimated the impact that improved GO rail services would have on the 2011 travel demand forecasts. The responses to Network 2011 all claimed that improvement to the GO rail services were not modelled explicitly in the Network 2011 travel demand forecasting and, as a result, the need for some or all of the proposed rapid transit lines could be deferred beyond the year recommended in the report. Metro and T.T.C. staff have reviewed these comments and have undertaken an analysis of the revised Network 2011 travel demand forecasts to determine the additional ridership that could be attracted to improved GO rail services if they were provided and the resultant impact on the revised Network 2011 rapid transit demand forecasts. The detailed results of these analyses are presented in Appendix C.

B. Background

In 1982 the Province announced a plan for inter-regional rapid transit services known as "GO-ALRT". Among the components of this plan were:

- short term improvements to the existing Lakeshore GO rail line with minimal capital investment;
- full service extensions of the Lakeshore Line to Oshawa and to Hamilton using new technology;
- analysis of options to replace the existing commuter rail service in the Lakeshore Corridor; and
- detailed analysis of a northern route through Metropolitan Toronto connecting Peel and Durham.

Work on the above projects proceeded until 1985, but work on the long term elements has been suspended in light of a further announcement by the Province that the GO-ALRT strategy is intended to be a very long term solution to inter-regional travel in the Greater Toronto Area, and that improvements to existing services and local transit initiatives could serve this demand for the next 25 years. As a result, the emphasis of Provincial study was placed on improvements to existing GO rail services rather than the creation of new lines using new technology.

The role of GO rail in serving inter-regional transit trips was recognized in the Network 2011 study. In fact, the Network 2011 report states "the GO rail commuter rail system is expected to play an increasingly important role in accommodating future travel demand, particularly for centrally-oriented peak period trips originating outside Metro." As a result, the Network 2011 strategy recommended:

o that the Province be encouraged to improve GO commuter rail lines into Metro, particularly for trips from the Regions of Halton and Peel (the Lakeshore West, Milton and Georgetown rail lines).

However, one concern about the role of GO Transit in serving the growth in inter-regional trip making is the current uncertainty regarding future plans for GO rail expansion and the cost-effectiveness of these plans.

GO Transit and the Ministry of Transportation and Communications, in conjunction with CN Rail and CP Rail, have been conducting investigations of service expansion options for the existing GO rail network. Although the studies have yet to be released and an overall system expansion plan announced, the Minister of Transportation and Communications announced in October 1985, that limited service improvements on the Lakeshore and Milton GO rail lines are to be implemented within two to five years. If the incremental service improvements to GO rail were to continue as required to meet demand, the impact on local rapid transit initiatives could be significant.

However, from a Metropolitan Toronto perspective, the lack of a public long range plan for the expansion of the existing GO rail system adds to the various uncertainties already inherent in long range transit forecasting. In the Network 2011 analyses certain assumptions were made regarding future GO rail services. These assumptions may or may not become reality, but because of the long lead time required for new projects, Metro should not delay the process of determining current and future rapid transit needs in Metropolitan Toronto. Many of the responses to Network 2011 made the point that, if GO rail services were upgraded, the need for a particular rapid transit line could be delayed. Metro staff do not dispute these arguments but, at this time, there are no formal GO system expansion plans and the cost effectiveness of possible GO rail improvements has not been examined nor compared to the cost of providing local rapid transit. Nevertheless, reviews of the rapid transit plan will occur every five years and any initiatives regarding improved GO services can be considered as part of the review process.

However, given that improved GO rail services could affect the future rapid transit demand forecasts, the Network 2011 ridership forecasts were reviewed assuming that a policy of upgraded GO rail services is pursued by the Province.

C. Impact of Improved GO Rail Services on 2011 Travel Demand Forecasts

1. GO Rail Ridership

When examining the role of GO rail in the context of the travel demand forecasting conducted for the Network 2011 study it should be pointed out that the Metro Travel Demand Model is essentially a two-mode model which forecasts municipal transit (bus, rapid transit) and automobile. As a result, the procedures in the Network 2011 travel demand forecasts used to project GO Transit demand likely underestimate future GO rail ridership.

The M1-85 Network 2011 travel demand forecasts were examined to determine the potential ridership that would be attracted to the western and northern GO rail services and, therefore, would not be assigned to the Network 2011 rapid transit lines. This review was based on examination of relative travel times between origins and destinations via improved GO rail services and the rapid transit lines. The implicit assumptions in the analysis are that GO rail service improvements will be provided as demand increases, improvements will be made to facilitate transfers between local transit and the GO rail services and that no trade-off between cost and time would take place. In recognition that trade-offs do occur and that the maximum potential ridership attracted to GO calculated by examining only travel times likely would not occur, a range of 50% - 75% of the maximum was used in this analysis.

2. Upgraded GO Services Across the West Metro Boundary

The City of Scarborough in its response to Network 2011 notes that increases in GO rail services across the West Metro boundary will divert trips destined for the Central Area from the Bloor-Danforth Line to GO rail. The results of this diversion of trips would be a reduction in the projected growth of the peak point load on the Bloor Line and, therefore, a delaying of the need for a parallel rapid transit line to relieve the capacity problems on the Bloor Line that are otherwise anticipated to occur by the turn of the century.

The Region of Peel and the Cities of York and Etobicoke, on the other hand, state that the Bloor Line will be at capacity before the year 2000 and that while improved GO services are important to serve trips destined to the Central Area, GO does not adequately serve the 75% of cross boundary trips that are not destined to the Central Area. Therefore, they argue that a rapid transit facility is required in the Eglinton Corridor to relieve the future overcrowding on the Bloor Subway and to serve non-CBD destined trips.

The M1-85 Base Case 2011 A.M. peak hour travel demand forecast for the Bloor Subway peak point load is 39,600. The results of the analysis of improved GO rail services identified a potential additional 4,300 - 6,500 A.M. peak hour riders that might be attracted to GO. The adjusted 2011 forecast for the Bloor Line would be approximately 33,100 -35,300.

The analysis also indicated that approximately 2,600 - 3,900 riders from Peel and Halton assigned to the 2011 EWRT Line could be served by improved GO rail services, thereby reducing the M1-85 EWRT ridership at the West Metro boundary from 11,400 to 7,500 - 8,800 passengers per hour.

The results of these analyses would seem to confirm the observations of the City of Scarborough about the relative timing of the EWRT and refute the arguments of Peel and the Cities of Etobicoke and York. With significantly improved GO rail services, the Bloor Line would appear to have surplus capacity to approximately 2011 and, therefore, it could still provide the distribution function for the non-Central Area trips that Peel and the City of York envision the EWRT would provide. However, as noted earlier in this section, these results are based on assumed GO rail services which may or may not be feasible or cost effective. It is felt that the best approach to the issue of improved transit services across Metro's west boundary is to monitor the situation closely to determine if, as a result of possible improved GO and other local transit services, the timing of the EWRT should be brought forward or delayed. Chapter V, further examines the need and timing of improvements to serve the commuter travel across the West Metro boundary.

3. Upgraded North-South Go Rail Services

The Cities of York, Scarborough and Toronto and the Region of Peel stated that improvements to the north-south GO rail services could off-load a significant proportion of the ridership expected to use the Yonge Subway and defer the need for the DRT. The Region of Peel and the City of York also stated that improvements to the north-south GO rail services could also defer the need for the Sheppard Subway.

An examination of the origins and destinations of existing T.T.C. riders in the Sheppard/Finch corridor identified a diversion potential of 1,200 - 1,700 A.M. peak hour riders who could reduce their overall travel times to the Central Area if they travel by an improved Richmond Hill GO commuter rail line. Approximately 7,800 A.M. peak hour riders currently use T.TC. bus services in the corridor.

The analysis of the M1-85 2011 Base Case ridership forecast identified that approximately 3,800 - 5,600 A.M. peak hour trips could be attracted to GO rail services from the Yonge Subway. A diversion of this magnitude would slow the rate of ridership growth on the Yonge Subway and could obviate the need for the DRT line prior to 2001. Growth into the Central Area on the University Subway could also be slowed as a result of the diversion of Peel and Halton riders from the EWRT to GO rail.

The analysis of the M1-85 2011 ridership forecasts identified a potential of 1,600 - 2,400 A.M. peak hour riders that could be attracted to GO rail services from the Sheppard Line. The impact of diverting these riders would be to reduce the forecast peak point load on the Sheppard Line to approximately 13,100 - 13,900 passengers per hour. Although the 2011 peak point load on the Sheppard Line would be reduced as a result of the improved GO services, this revised forecast is still high enough to warrant rapid transit in the Sheppard/Finch corridor even with improvements to north-south GO rail services.

The results of these analyses indicate that improved north-south GO rail services could delay the need for the DRT to beyond 2001. However, as noted in the discussion of improvements to western GO rail services, the impact of the improvements are all based on the assumption that the service levels provided will effect the required shift from local rapid transit to GO rail facilities. Since, at this time, the extent, timing and cost-effectiveness of improvements to north-south GO rail services are uncertain, the best course of action would be to continue to monitor the need for the DRT and to assess the impact of possible GO rail improvements during the first review process in five years and to determine if the implementation of the DRT should be delayed.

D. Fare and Service Integration

Many of the responses to Network 2011 have recommended that fare and service integration between GO Transit, the T.T.C., and the local transit operations in the surrounding regions would encourage the use of transit for inter-regional trips. The analyses conducted for this review have indicated that if fare and service integration were implemented, additional ridership would be attracted to the GO rail system that would otherwise use the proposed rapid transit lines.

Metro and T.T.C. staff have concluded that a program of fare and service integration should be pursued, with an equitable cost and revenue structure to be determined in discussions with the Province.

Staff also note that if such a program is implemented the Town of Markham's concerns with respect to the feeder bus network serving a Sheppard Avenue alignment should be alleviated.

E. DRT/T.T.C./GO Capacity at Union Station

The staff reports on the Network 2011 strategy by the City of Toronto and the Region of Peel commented that while the proposed DRT Line would achieve its objective and relieve crowding problems on the Yonge Line at its peak point south of Bloor Station, it would, in fact, be transferring the crowding problem from the Yonge Subway to Union Station where passengers from the Yonge-University-Spadina Line, the DRT Line and GO rail would all disembark. The City of Toronto has commented further that a Wellington Street alignment in place of the Front Street alignment could remove the passenger load from Union Station and distribute it to the King and St. Andrew Subway stations.

The issue of capacity problems at Union Station is one of pedestrian access and circulation and not rapid transit network planning. This issue is one of many that a separate study on Union Station is currently investigating under the auspices of the Railway Lands Steering Group. It is anticipated that this study will be recommending improvements to the pedestrian system in and around Union Station and that the additional passenger flow from the DRT (if the Front Street alignment is selected) will be included in their analyses. In addition, a final decision on an alignment for the DRT through the downtown need not be made until it is apparent that the DRT is to be the next priority.

F. Summary

The issue of the role that will be played by GO rail in the future transportation network serving the greater Metropolitan area is one of uncertainty. The results of the analyses indicate that if convenient access is provided to improved GO rail services and service levels are increased, a proportion of the growth in inter-regional trips could be accommodated on GO rail and as a result, the need for the EWRT and the DRT could be delayed beyond the year 2001. However, at this time, the probability that the convenient access and the improved services will be provided is uncertain. Until such time as the Province formally commits to a comprehensive program to improved GO services it would not be appropriate to change the priorities for the EWRT and the DRT from that proposed in the Network 2011 strategy. The most prudent course of action to take at this time would be:

1. to review the feasibility studies now being completed by GO Transit and the Ministry of Transportation and Communications;

2. to develop short and long range plans for the expansion of the GO rail network, taking into account the overall cost-effectiveness of various rapid transit options; and

3. to monitor the impacts of improved GO rail services and take this information into account during the five year reviews.

V. THE WEST METRO BOUNDARY

A. Introduction

The Cities of Etobicoke and Mississauga and the Region of Peel all commented in their responses to the Network 2011 recommendations that an early implementation of the EWRT Line is required to alleviate the cross-commuting problems experienced at the Peel/Metro boundary. In recognition of their concerns, the West Metro Boundary Transportation Review was completed to attempt to thoroughly understand the nature of the cross-boundary problems and to identify the most effective means to address these problems.

B. The West Metro Boundary Transportation Review

Over the past fifteen years, high population and labour force growth in the Regions of Peel and Halton have resulted in substantial increases in peak period commuting across Metro's western boundary. Recommendations for a review of cross-boundary travel were made in the Metro/T.T.C. Rapid Transit Study completed in 1982; at that time, it was considered that the Ministry of Transportation and Communications was in the best position to co-ordinate such a review. Various analyses of the West Metro boundary problems and possible transit solutions were completed during the course of the rapid transit studies, including the GO-ALRT studies. In 1986, Metro and T.T.C. staff completed the West Metro Boundary Transportation Review, which consolidated the findings of these studies. This study is summarized in Appendix D.

Growth in the population of the Regions of Halton and Peel has been a main contributor to the large increase in typical weekday work trip travel across the West Metro boundary (276% increase between 1971 and 1981), the result of which has been a steady service deterioration on the road facilities across the boundary as capacity is approached. Future travel demand forecasts indicate a continued decline in the road service levels across the boundary and a need has been identified for improved transit service to alleviate these problems. Projections of future travel demand depend largely on forecasts of future population and employment and on how the population and employment is distributed. As noted previously, a number of demographic forecasts for the Greater Toronto Area have been prepared recently; the range of impacts on travel demand across the West Metro boundary and how that demand can best be satisfied have been examined.

The West Metro Boundary Transportation Review identified the locations of the present problems, where the problems will intensify and, most importantly, the nature of the problems. The review concentrated on identifying solutions that had the best chance of succeeding in accommodating the increases in cross boundary travel. The review proposed a strategy that addresses the current and future cross boundary problems while recognizing the risk involved in making recommendations for large capital investments.

C. Land Use and Travel Demand Forecasts

The three land use forecasts discussed in Chapter III were examined in detail in the study of the West Metro boundary problem to determine how the differences among the forecasts would affect cross boundary travel demands.

As noted in Appendix D, the significant differences in land use forecasts, particularly for Mississauga and the Central Area, indicate a high degree of uncertainty for future population and employment growth and, therefore, for future travel demand. There was no attempt in the study to rationalize the forecasts; rather the impact of future cross boundary travel was examined in the context of the different land use forecasts.

Total persons crossing the boundary in the eastbound direction during the A.M. peak hour forecast using the 2011 land use scenarios range from 80,400 (Peel) to 107,200 (GO-ALRT 'A'). Although the number of trips across the boundary differed for each land use scenario, the proportional distribution of the trips was comparable for each land use. As a result, while there is some uncertainty with regard to the magnitude of the problem at the boundary, the nature of the problem (i.e. where people are coming from and going to), appears to be consistent among all land use scenarios.

D. Nature of the West Metro Boundary Transportation Problem

The West Metro Boundary Transportation Review examined current and future road capacity deficiencies at the boundary and the effect of future road deficiencies on the provision of possible transit services across the boundary. The main conclusions of this analysis were:

- improvements to increase road capacity across the boundary are available, although limited; however, even with these improvements, capacity deficiencies will still occur;

- given that, in general, roads across the boundary cannot accommodate future demand, transit solutions will have to be initiated if this demand is to be served;

- 40% to 50% of cross boundary auto travel is destined to Etobicoke, mainly Rexdale and south Etobicoke. Because of the north-south dispersion of employment concentrations in Metro, one high capacity facility, while providing a useful trunk facility which improves the transit grid, is unlikely to attract a major proportion of these auto trips to transit; and

- the three GO rail services across the boundary will play an increasingly important role in serving trips destined for downtown Toronto.

The nature of the cross boundary problem was shown to be, as many had already observed, that road capacity across the boundary, even when improved, cannot accommodate future demand; however, these problems exist only south of the Airport and are critical only in the Lakeshore corridor. In addition, because of the distribution of destinations of the cross-boundary trip makers, except for those destined to the Central Area who could be accommodated by improved GO rail services, the majority are scattered amongst a variety of destinations many of which possibly could be better served by local surface transit rather than one high capacity rapid transit facility.

The nature of the West Metro boundary problem is such that improved transit services across the boundary are essential to accommodate future demand. A number of transit options were examined in the review and are discussed in Appendix D. In the context of the Network 2011 recommendations, the role of the Eglinton West Rapid Transit Line in serving cross boundary travel has been commented on by the Cities of Etobicoke, York and Scarborough and the Region of Peel. The West Metro Boundary Transportation Review examined this option in detail in terms of its ability to relieve pressure on the road system at the boundary.

E. Eglinton West Rapid Transit

The Network 2011 report recommended that the most suitable scenario for the Eglinton West Rapid Transit (EWRT) Line is a busway opening in 2003 with an upgrading to either light rail or subway by 2014. Alternatively, it was noted that if potential transit demand in the Eglinton West coridor were to materialize faster than anticipated, it is possible that a full rapid transit line could be justified by the turn of the century. If this were the case, the line could be built initially as a rail system, with a staged construction program starting with the segment from the Spadina Subway to Scarlett Road.

The key arguments (from a Metropolitan perspective) put forward in support of the EWRT Line are summarized as follows:

- provide relief to the Bloor Subway when capacity is reached;

- provide a transit bridge across the boundary in order to accommodate the 65% - 70% of trips that are not centrally oriented; and

- respond to a need to improve transit capacity at the boundary in lieu of increased road capacity.

Each of these points is discussed below.

1. Bloor Subway Capacity

In the A.M. peak hour, peak point ridership on the Bloor Subway occurs eastbound between Spadina and St. George Stations. The T.T.C. standard for the maximum practical capacity of a subway is 34,000 passengers per hour per direction. The 2011 ridership forecasts indicate that the Bloor Subway will reach capacity sometime between 1996 (GO-ALRT 'A' land use) and 2004 (M1-85 land use).

In Chapter IV, a range of 4,300 - 6,500 A.M. peak hour riders was identified which could be attracted to GO Transit from the Bloor Subway forecast. The revised 2011 net ridership forecast for the Bloor Line, based on the GO rail attractions, would be in the range of 30,900 to 33,100 A.M. peak hour riders. Therefore, if the GO services were increased to satisfy the forecast demand, the Bloor Subway would not reach capacity prior to 2001 and might not exceed capacity by 2011.

2. EWRT as a Transit Bridge

In reviewing the role of the EWRT Line as a 'transit bridge' across the boundary, it was necessary to review the forecast ridership in terms of numbers and distribution. The EWRT Line was found to be slower than GO rail for downtown destinations for all origins from Mississauga, but competed well for trips originating in north central Mississauga destined to Metro north of St. Clair Avenue. Origins in north-west and north-east Mississauga (Meadowvale and Malton) were better served by the existing GO bus services to destinations north of St. Clair Avenue. Based on these service catchment areas a manual re-assignment of the EWRT ridership forecast was carried out which resulted in a probable range of 3,300 to 4,600 A.M. peak hour riders being attracted by these alternative GO services. The revised EWRT 2011 A.M. peak hour ridership forecast at the Metro boundary would, therefore, be in the range of 6,800 - 8,100 passengers compared to 11,400 in the M1-85 forecast. Additionally, less than one quarter of the travel demand on the EWRT is destined to the Eglinton West corridor, and the redevelopment opportunities in the corridor indicate little potential to increase the proportion of corridor-destined ridership.

3. Forced Modal Split Due to Roadway Capacity Limitations

The Region of Peel and the City of York have stated in their responses to Network 2011, that because the Metro travel demand model over-estimates auto travel across the boundary compared to the available future road capacity, more commuters would be forced to make their journey by transit and, hence, transit demand forecasts for the EWRT Line are low. In reality, the lack of adequate road capacity would produce a number of related results:

(a) The projected land use pattern might not materialize;
(b) Trip distribution patterns would change, based on relative levels of transportation accessibility and capacity;
(c) Trip making characteristics, such as peaking and auto occupancy would change; and
(d) Some forecast auto trips would be 'forced' to use transit.

The current procedure in considering the 'forced modal shift' of these over-estimated auto trips is to carry out sensitivity testing of other transit initiatives that could reasonably satisfy this auto travel 'desire' which is in excess of future road capacity.

The auto trip making patterns that would not be well served by the EWRT are primarily the shorter distance commuting trips to Etobicoke (mainly Rexdale and south Etobicoke), which are concentrated on cross-boundary road facilities south of Bloor Street. This unsatisfied demand is spread out at both the destination and origin ends making a forced modal shift to the EWRT, or to any one rapid transit facility highly unlikely.

4. EWRT Summary

The following conclusions can be drawn with regard to the three stated objectives of the EWRT:

1. the Bloor Subway is unlikely to require relief prior to the year 2001;
2. it is not certain whether the EWRT Line would provide a successful bridge to accommodate the 65% - 70% of non-CBD destined trips as the Eglinton corridor contains only a small proportion of these trip destinations at present; and
3. the EWRT Line increases capacity at the boundary but not necessarily where the current shortfall in road capacity exists.

It must be noted that the West Metro Boundary Transportation Review has concentrated solely on the role of the EWRT as a boundary relief line. No consideration has been given to its function and need internal to Metro. In particular, the M1-85 2011 A.M. peak hour ridership forecast immediately west of the Spadina subway is 17,600. With a downward revision applied to this forecast due to upgraded GO rail services, there still leaves an assignment of approximately 13,200 to 14,700 peak hour passengers, which would mean that an Eglinton West rapid transit facility within Metro is still justified in 2011 based on the M1-85 land use estimates, even when upgraded

GO services are taken into account. However, because of the long timeframe necessary for this demand to mature, an EWRT Line is not necessary initially and cross-boundary transit riders from Mississauga could be connected to the Bloor Subway in the interim. Therefore, the timing of the implementation of the line does not need to be committed to at this time, but can be examined within the Network 2011 five-year review process.

F. The West Metro Boundary Recommended Strategy

Because of the uncertainty of the travel demand forecasts, the feasibility and cost of GO rail improvements and the possible over assignment of trips to the road network, a high degree of risk was identified in the implementation of long term transportation solutions to solve the West Boundary problem.

The Executive Summary of the West Metro Boundary Transportation Review (Appendix D) outlines a proposed strategy to minimize the risk of early investment in capital intensive transit projects, a synopsis of which follows:

- implementation of road improvements as demand warrants;
- implementation of incremental improvements to the GO rail services;
- introduction of fare and service integration among GO/T.T.C./Mississauga and Brampton Transit;
- protection of future rapid transit options including the EWRT; and
- initiation of an ongoing review process to be co-ordinated with the Network 2011 five year reviews.

G. Summary

The Cities of York, Etobicoke and Mississauga and the Region of Peel have all expressed concern that the cross boundary problems are growing and that the EWRT should be implemented sooner than programmed in Network 2011 to relieve this problem.

The results of the review of the West Metro boundary problem indicate that the distribution of travel across the boundary could best be served in the short term by increased GO rail services and improved local municipal bus services, including fare and service integration. It would appear that, given the possibility of significant improvements to other transit services, the need for the EWRT to accommodate cross boundary travel will not be imminent prior to 2001. The option of a rapid transit facility in the Eglinton corridor, however, should be retained for consideration in the five-year reviews of the rapid transit strategy.

VI THE CENTRAL AREA

A. Introduction

The Central Area of the City of Toronto (Planning District No.1, commonly referred to as "The Downtown") is the primary focus in the Greater Toronto Area (G.T.A.) for commercial, retail, institutional and recreational activities. The Metropolitan Toronto Official Plan states that "the Central Area will remain the pre-eminent centre... of the Metropolitan Region" and that adequate transportation facilities to the Central Area should be provided to support employment growth. As such, although the Official Plan clearly states the objective of decentralization and the need for rapid transit to support the Metropolitan Centres, the transportation needs of the Central Area must be an integral component of future transportation planning for Metropolitan Toronto.

The Cities of Toronto and Scarborough note in their responses to Network 2011 that changes in the type of employment expected to locate in the Central Area and in the distribution of the labour force expected to occupy this employment may result in fewer trips destined to the downtown area than have been previously forecast. The land use and travel demand estimates for the Central Area and how they relate to possible transportation network improvements are examined in this chapter.

B. Land Use and Travel Demand

The two major land-use issues related to future travel demand to the Central Area are employment growth in the Central Area and the distribution of the residential locations of the labour force that will work in the Central Area.

1. Employment

Total employment levels in the Central Area increased approximately 14%

between 1970 and 1984, from 318,400 to 361,800. Office employment increased from 140,700 (44% of total employment) to 219,200 (61% of total employment) during that period, while industrial employment decreased from 65,700 (21% of total employment) to 29,100 (8% of total employment). It is projected that, while office employment will continue to grow (to approximately 293,000 by 2001), industrial employment will remain relatively stable (at approximately 24,200 in 2001).

While during the past 15 years net Central Area employment growth has been modest, as office employment replaced industrial employment, future office employment growth generated by the proposed commercial developments in the area will be substantial, with total employment increasing accordingly. Therefore, the single most important factor influencing Central Area transportation demand will be the increase in work trips generated by the growth in downtown office employment.

The rate of office employment growth and the effect it will have on the transportation needs of the downtown are dependent on a number of factors relating the amount of commercial development in the Central Area to future transportation demand:

(i) amount of commercial development;
(ii) vacancy rates;
(iii) office floor space per employee ratios; and
(iv) peak hour trip rates.

The rate of growth of commercial development and the vacancy rate are highly dependent on the Country's economic situation. The economic downturn which occured in 1982 resulted in an increase in the Central Area office vacancy rate from 3.4% in 1981 to 7.1% in 1982. The vacancy rate continued to increase in 1983-84 to approximately 10.5% and is currently about 10%-12% as a result of the increase in the amount of total leaseable floor space in the downtown area. It is anticipated that the vacancy rate will stabilize over the long term at approximately 8%. The overall growth in the economy and therefore, the resultant amount of commercial space developed is expected to moderate and the high office employment growth rate of the 1970's is not expected to continue. Therefore, although the future total amount of commercial development can be estimated based on existing zoning and Official Plan designations, the timing and occupancy of the developments are conditional on the economic environment and, as a result, are somewhat uncertain in a 30-year forecast.

The amount of floor space per employee and, therefore, the total number of employees in the commercial developments in the Central Area has been changing over time. The impact of technological change in the office environment and the apparent shift of clerical functions out of the Central Area has resulted in an increase in the average floor space per employee. The City of Toronto staff response to Network 2011 indicates that this trend is likley to continue, resulting in the location in the Central Area offices of mostly executive, managerial and professional staffs. The impact of the concentration of this type of employment on peak hour trip rates could be a slowing of the rate of growth of peak period travel, as this "executive" sector might be expected to have more space requirements and to have less routine travel patterns, which could occur outside the traditional peak periods.

The net effect of the impact of the factors affecting office employment would be a slower rate of growth in peak period travel demands compared to that observed during the 1970's and early 1980's.

2. Labour Force

Travel patterns result from both origins and destinations and, therefore, it is also important to consider where people are travelling from when considering the impact of increased office growth.

Population and labour force within Metro remained relatively stable between 1971 and 1981 and are expected to remain stable to the end of the century. Consequently, as population and labour force outside Metro continue to grow, the percentage of the G.T.A. labour force residing in Metro will continue to decline. One exception is the population and labour force of the Central Area itself which is expected to increase substantially.

The effect on travel patterns resulting from the changes in labour force distribution will be more longer distance commuting trips, primarily focussed on the commuter rail and expressway networks and approximately the same number of medium distance trips within Metro focussed primarily on the local rapid transit system.

Exhibit 6.1 compares the 1981 A.M. peak hour travel demand to the Central Area with the 2011 A.M. peak hour travel forecasts using the GO-ALRT'A' and M1-85 land uses. As noted earlier, the increase in Central Area population will result in a significant increase in local trips originating in and destined to the Central Area from 26,800 in 1981 to 41,700 in 2011 (M1-85). Medium distance trips from the remainder of Metro are forecast to increase from 126,900 in 1981 to 135,250 in 2011 based on the GO-ALRT 'A' land use; however, the M1-85 land use produces a forecast of 128,000 in 2011, an increase of only 1,150 trips over 1981.

Longer distance trips from the Regions outside Metro are forecast to increase from 21,200 in 1980 to 43,800 based on the 2011 M1-85 land use; the GO-ALRT 'A' land use produces an estimate of 45,900 trips in 2011.

The uncertainties of the land use forecasts for 2011 have been discussed previously; however, as noted earlier in this chapter, the factors which influence the employment forecasts for the Central Area, and hence the travel demand projections, can be monitored to obtain up-to-date information which can be input into the employment forecasting technique. The Central Area Monitoring Program, a joint effort of Metro, T.T.C., GO Transit, and

City of Toronto staffs, will be monitoring development levels and travel demand within the Central Area and this information will be available for use in the proposed five year rapid transit review process.

C. Transportation Improvements

The net result of the examination of the GO-ALRT 'A' and M1-85 land use and travel demand forecasts is the expected lower levels of transit patronage from the areas of Metro outside the Central Area in the M1-85 forecast compared to the GO-ALRT 'A' projections. Significant increases in total transit trips are forecast to occur within the Central Area itself and from the Regions.

The comments on the Network 2011 recommendations by the Cities of Scarborough, Toronto and York and the Region of Peel all note that improvements to the GO rail network would serve most of the increase in inter-regional commuting trips to the Central Area. The results of the analysis of the impact of potential GO rail improvements on the Network 2011 model assignments reported in Chapter IV, confirm the observations of their responses. Western and northern GO rail improvements could attract 8,100 to 12,100 additional A.M. peak hour transit trips destined to the Central Area from the Base Case rapid transit network. A forecast revision of this magnitude could defer the need for the DRT line until after the year 2001.

However, as noted in Chapter IV and emphasized in the City of Toronto staff response to Network 2011, the extent and cost-effectiveness of the GO rail improvements and the resultant impact on future trips via the T.T.C. are unknown at this time. Options must therefore be protected to provide for the local transportation facilities to serve the Central Area if sufficient GO rail improvements to serve the inter-regional demand are not implemented.

In the short term, surface transit relief services, such as the Sherbourne Express Bus and the Spadina LRT, can provide the capacity increases to serve ongoing development. Long term options such as the DRT should be protected and the timing of their implementation reviewed in the five year review process. Other options that could provide possible long-term relief to the overcrowding of the existing subway lines, such as the Bay LRT suggested by the City of Toronto, can also be included for analysis in the review process.

The City of Toronto staff recommendation that the DRT alignment should be via Wellington Street instead of via Front Street, as recommended in the DRT study, can be analyzed as part of the five-year review process that would be undertaken prior to obtaining approval to proceed with the DRT Line.

D. Summary

The future employment levels within the Central Area and, therefore, the resultant levels of peak period travel demand to the downtown indicate that the need for the DRT may not be as imminent as recommended in the Network 2011 report. However, the timing of the need for the DRT is conditional on the extent and cost effectiveness of GO rail improvements and the success of interim municipal transit initiatives. If these improvements do not prove to be feasible/successful, the DRT may be required as the second priority of the Network 2011 rapid transit expansion program.

Exhibit 6.1

Comparison of GO-ALRT 'A' and M1-85 Travel Demand Forecasts to the Central Area

From	A.M. Peak Hour Total Person Trips 1981 Simulated *	 2011 GO-ALRT 'A;	 2011 M1-85	A.M. Peak Hour Total Transit Trips 1981 Simulated *	 2011 GO-ALRT 'A'	 2011 M1-85
Central Area (P.D.1)	26,750	32,550	41,700	19,850	24,400	30,800
Rest of Metro	126,850	135,250	128,000	91,700	97,600	92,000
Sub Total Metro	**153,600**	**167,800**	**169,700**	**111,550**	**122,000**	**122,800**
Peel/Halton	15,050	30,700	28,400	10,200	23,050	21,150
York	4,550	12,200	11,850	3,100	8,850	8,600
Durham	1,550	2,950	3,550	1,150	2,450	2,900
Sub-Total outside Metro	**21,150**	**45,850**	**43,800**	**14,450**	**34,350**	**32,650**
Total Trips to Central Area	**174,750**	**213,650**	**213,500**	**126,000**	**156,350**	**155,450**

* 1981 simulated travel flows using the Metro Model

VII. NETWORK PRIORITIES

A. Introduction

The major thrust of the majority of the responses to the Network 2011 recommendations was the timing of the individual segments of the three rapid transit lines. Simply put, East York, Etobicoke, Scarborough, York, Mississauga and Peel each presented a case to have the timing of the rapid transit line within their respective municipality programmed earlier than recommended in Network 2011. In order to review the relative timing of all the proposals, Metro and T.T.C. staff have re-examined the proposed Network 2011 strategy in light of the additional analyses undertaken in response to the area municipal concerns.

B. Network 2011 Strategy

The Network 2011 study consolidated the results of the Sheppard/Finch, Eglinton West and Downtown Rapid Transit studies in a consistent system overview leading to recommendations on a future rapid transit strategy for Metropolitan Toronto.

The main elements of the rapid transit strategy are:

(i) Affordability

The Metropolitan Chief Administrative Officer's Department in early 1985, undertook an analysis of the Capital Funding capability of Metro Toronto to the year 1994 to assess capital project affordability, while maintaining mill rate increases equal to or less than the rate of inflation, ensuring that the debt servicing costs do not exceed 15% of the levy and that no less than 50% of net capital expenditures are raised in the levy. The average annual funding that was determined to be available for rapid transit for the period 1986-1994 assuming no change in funding priorities, after providing for T.T.C. non-capital transit requirements and other Metro projects recommended in the report, is $101.4 million (in 1985 dollars). This amount includes the existing 75% contribution by the Province for rapid transit financing.

The Metropolitan Toronto Board of Trade and the Toronto Redevelopment Advisory Council have both noted that expenditures for improvements to the Metropolitan road system must be taken into account when discussing the affordability of the proposed rapid transit expansion program. It is important to note that in the CAO's study the level of annual capital expenditures for Metro road capacity improvements was assumed to be approximately $25 million per year, which is approximately double the current annual expenditure.

Network 2011, therefore, recommended construction of rapid transit facilities within the affordability guidelines identified by the CAO's report. If the funding availability were greater, Network 2011 could have recommended that either additional lines be constructed at the same time or that the timeframe for implementation of all the programs be reduced. However, this was not the case and priorities had to be set to keep expenditures within the limits identified.

One important assumption made in the affordability analysis was the continued 75% capital subsidy provided by the Province. If this subsidy level were to be modified, the level of affordable annual expenditure would change, as would the timing of the implementation of the recommended program.

(ii) Opening Lines in Operable Segments

An important consideration of the Network 2011 strategy in determining the phasing of the recommended rapid transit lines was the ability to construct and open segments of the proposed lines approximately every five to seven years. A five to seven year construction program leading to full integrated operation of that section with the remainder of the T.T.C.'s system was considered to be a reasonable target that was achievable and affordable. Therefore, the three proposed rapid transit lines were examined to identify, irrespective of other considerations, segments which could be constructed and in operation within the five to seven year timeframe.

(iii) Five Year Review Process

A formal process of monitoring development, usage of existing transit services and overall travel patterns and reporting thereon every five years was proposed in order to review the need and timing of the subsequent phases of the rapid transit program. During these five year reviews, examination of possible alternative rapid transit lines, in addition to those already proposed in Network 2011, can also occur.

This element of the strategy is important to assess the possible ramifications of changes in land use patterns and projections, the adequacy of the Central Area transportation network as development continues and the possible implementation of upgraded GO Transit services including fare and service integration by the Provincial government.

(iv) Implementation of Interim Relief Measures

Given that the Network 2011 recommendations will take approximately 28 years to implement fully, interim measures to accommodate increased transit demand in the corridors of staged or delayed construction must be provided.

The ultimate result of the Network 2011 strategy is the recognition that all the recommended transit lines cannot be built and opened to the public at the same time; construction must be phased with interim surface transit improvements implemented in some corridors to accommodate demand until a future rapid transit line is complete. Reviews every five years will monitor changes in the factors that influence rapid transit planning in order that updated information is available to examine the need and timing of future segments of the network.

Therefore, to be able to implement the Network 2011 strategy, priorities had to be established to determine the timing of each of the segments of the network. The criteria which were used to determine the system priorities were strategic development objectives and transportation system needs.

C. System Priorities

The Network 2011 study determined the priorities of the individual rapid transit segments by weighing the combination of strategic development benefits and future transportation system needs. The Network 2011 recommendation of stage I of the Sheppard Line as the first priority, emphasized the need to reinforce the Metropolitan objective of sub-centre development while recognizing transportation system needs by providing interim surface transit relief for the Central Area and the West Metro boundary.

The review of the responses to the Network 2011 recommendations identified that the timing of the proposed rapid transit expansion was the major concern of the respondents. The Cities of Etobicoke, Mississauga and York and the Region of Peel all want the proposed EWRT Line implemented sooner than recommended in Network 2011. The Borough of East York would like the DRT line implemented first, while the City of Toronto staff report suggests that the DRT be implemented as proposed as the second priority. The Cities of North York and Scarborough want the first phase of the Sheppard Line implemented as the first priority, with Scarborough requesting the completion of the Sheppard Line before the DRT and EWRT. The Region of York wants a Finch hydro right-of-way alignment instead of the Sheppard alignment. The question still to be answered, therefore, is which element of the program, if any, should be recommended as the first priority.

The new land use projections (M1-85) for 2011 developed by the Metropolitan Planning Department indicate continued growth in employment in the Central

Area of Toronto, with the majority of the population increases forecast for the Regions outside Metro. The new travel demand forecast modelled using the M1-85 land use decreases the System 3 rapid transit ridership estimates by approximately 5% to 15%. These decreases, however, are not significant enough, by themselves, to warrant changes in the Network 2011 recommendations.

The role of GO Transit has been identified as a major element of the 2011 transportation network serving Metropolitan Toronto. Upgraded GO rail services could attract significant numbers of riders who have been assumed to use the proposed new transit lines. If the GO rail improvements are proven to be cost-effective, their implementation could forestall the need for the EWRT and DRT Lines until after 2001.

Additional uncertainties with respect to the need for the earlier implementation of both the EWRT and DRT Lines were also identified. The West Metro Boundary Transportation Review has reported that, while the long term option for the EWRT Line should be protected, in the short term other possible improvements, which are less costly and have less risk associated with them, could be implemented to serve the cross boundary demand. A review of the transportation requirements of the Central Area concurs with the City of Toronto's staff position that uncertainties with respect to future employment growth in the Central Area point to the need to monitor development in the downtown area to determine the timing of the need for the DRT Line.

The phasing of the Network 2011 rapid transit lines must still be based on strategic development objectives and transportation system needs. The transportation system needs in the Eglinton West corridor and in the Central Area may best be served, at least in the short term, by improvements other than local rapid transit. The strategic development objectives identified in Network 2011 continue to exist and implementation of a rapid transit line in the Sheppard/Finch corridor as the first priority, would aid in the fulfillment of these goals while meeting important future transportation needs.

However, the decisions on subsequent priorities will be influenced by a number of factors which have associated with them a high degree of uncertainty, such as future land use and travel demand and the cost-effectiveness of upgraded GO rail services, the impact of which could delay or accelerate the need for one or more of the remaining priorities.

Therefore, since the Network 2011 strategy embodies an explicit formalized review process that occurs every five years, the decision on the next and subsequent priorities can be held until the first review in 1991-1992. The period between now and the first review will permit the collection and analysis of updated information on land use and on the plans and costs of GO rail improvements which can then be used to review and evaluate the next rapid transit priority. Finally, it should be noted that all possible rapid transit options should be examined during the review process, including the extension of the Sheppard Line to the west as proposed by the City of Scarborough and potential GO rail initiatives.

D. The First Priority

1. Rapid Transit in the Sheppard/Finch Corridor

The review of the major issues raised in the responses to Network 2011 has indicated that early implementation of the EWRT and DRT Lines may not be warranted and the need to more precisely identify the timing of these lines can be deferred until, at least, the first five year review in 1991-92.

The need for early implementation of rapid transit in the Sheppard/Finch corridor, in order to fulfill the objectives of the Metropolitan Official Plan and to serve the already high volume of existing transit riders in the corridor exists and, therefore, the Network 2011 recommendation that the rapid transit expansion program begin in the Sheppard/Finch corridor is still valid.

Given that rapid transit in this corridor should be the first priority, a number of related issues dealing with the specifics of how rapid transit is implemented must be addressed. Appendix E examines these issues in detail and they are summarized in the following section.

2. Choice of Alignment

The Region of York and the Town of Markham indicated a preference for a rapid transit line in the Finch hydro right-of-way. The Cities of North York and Scarborough indicated a preference for the recommended Network 2011 Sheppard Avenue alignment.

The Sheppard Avenue alignment would serve approximately the same population as a Finch alignment, however, the Sheppard alignment would serve approximately 50% more existing and future employment than the Finch alignment. The other major factor which discriminated among the three alignment options was cost. For alignments along Finch Avenue or the hydro right-of-way, the Spadina Subway would have to be extended an additional two kilometres; similarly the north-south segment into the Scarborough City Centre via McCowan Road would be three or four kilometres longer in length. Thus, selection of either of the two more northerly alignments would require construction of an additional four to six kilometres of route, adding up to 33% more length than the Sheppard option. From a Metro perspective, there is no transportation advantage from this additional cost.

Therefore, the most appropriate alignment for a rapid transit line in the Sheppard/Finch corridor is along Sheppard Avenue.

3. Choice of Technology

The Streetcars for Toronto Committee, in a presentation to the City (of Toronto) Services Committee, expressed concern that the Network 2011 study did not fully assess the LRT (streetcars) technology prior to recommending subway technology for use along the Sheppard alignment.

The projected 2011 A.M. peak hour peak demand along Sheppard Avenue is 15,400 persons per hour. Four types of rapid transit technology were examined to serve the demand in the corridor: busway; LRT at grade, partially grade-separated, or fully grade-separated; elevated medium rail transit (MRT); and subway. The choice of technology is related to many factors including demand levels, annualized costs (capital plus operating), service, and social, environmental and land use impacts.

Because of the right-of-way width restrictions for a busway in the median of Sheppard Avenue, by-pass lanes would not be possible and capacity would be limited to about 6,400 persons per hour per direction (pphpd). An LRT totally at-grade could theoretically carry 12,000 to 16,000 pphpd, however, the impacts on cross-traffic at such high frequencies would be unacceptable. Thus the only practical LRT would be the "partially grade-separated" option with a minimum of five grade separations assumed at major cross streets.

A fully grade-separated LRT option and the elevated MRT technology were examined and, while both technologies could accommodate the forecast passenger demand, the total cost of these options (operating and capital) would be in the range of subway technology and both would have significant environmental, property and traffic impacts compared to the subway option. Therefore, these technologies were not considered appropriate for the Sheppard Avenue alignment.

The partially grade-separated LRT and the subway option were considered the only technologies that could reasonably be used in this corridor and they were compared in detail:

- The high capital costs of subway construction are offset by lower operating, property and vehicle costs compared to LRT when demand is above 15,000 passengers per hour.

- Subways operate at approximately 38 kilometres per hour compared to the assumed 27 kilometres per hour for LRT, thereby providing significant travel time savings in the order of 40%.
- A subway has negligible effect on the road system after the initial construction period, while a partially grade-separated LRT system would have unacceptable impacts on the road capacity along Sheppard Avenue.
- Compared to subway, a partially grade-separated LRT would have significant impacts on abutting residential and commercial lands in terms of residential and commercial properties displaced and noise and vibration effects.

In summary, the subway option on Sheppard Avenue is superior to LRT based on total annualized costs, road system impacts, and social, environmental and land use impacts.

4. Phasing of the Sheppard Subway Line

The City of Scarborough in its response to Network 2011, requested Metropolitan Council to establish, as first priority, construction of the entire Sheppard subway line from an extended Spadina Subway to the Scarborough City Centre. In addition, the Scarborough and North York staffs raised concerns in their staff reports to Council, about the need for the "wye" connection at Yonge and Sheppard, recommended as part of the Network 2011 phasing, claiming that the "wye" represents an unnecessary interim cost.

Metro and T.T.C. staff have re-analyzed the Sheppard phasing question in response to the North York and Scarborough comments. The "wye", estimated to cost around $40 million ($1985), would be required to bring Sheppard trains into and out of the Davisville yard via Yonge Street, in the absence of a Sheppard connection to the Spadina Subway. Thus if Sheppard Subway construction proceeds east from Yonge Street, a "wye" is needed.

However, the cost of the "wye" would be offset by operating cost savings if Sheppard trains run east of Yonge Street before the western stages are implemented. Thus the "wye" would not be a factor in the Sheppard phasing decisions.

T.T.C. staff do not consider a "wye" at Yonge Street and Sheppard Avenue to be an unnecessary intereim cost. While T.T.C. would not recommend the "wye" if Sheppard service could commence with a connection to the Spadina Subway, the "wye" will always have a strategic operational benefit to the subway system.

A financial analysis of phasing options for the Sheppard Subway (exclusive of priorities on the other 2011 lines) revealed that the net discounted costs for all options would be comparable, providing that the ultimate completion dates are similar. Thus, a phasing program for the Sheppard Subway should be determined based on transportation and development considerations rather than cost. Staff have, therefore, confirmed their previous recommendation that the Yonge to Victoria Park segment should be the first phase of the Sheppard Subway to be implemented. The next Sheppard phase would be to extend the line east to the Scarborough City Centre followed by the westward extension to Allen Road and the Spadina Subway extension. This phasing program does not preclude other rapid transit lines from being interspersed among the Sheppard phases. It is expected that the five year review process would identify succeeding priorities, be they on Sheppard Avenue, Eglinton West or in the Downtown, after the opening of the recommended Yonge to Victoria Park segment. Additional details on this analysis are contained in Appendix E.

It is estimated that the first phase of the Sheppard Subway from Yonge to Victoria Park will cost $501.3 million ($1985) .

E. Recommended Final Network 2011 Strategy

All the elements of the original Network 2011 strategy are still the foundations for the conclusions of this report:

(i) Affordability;
(ii) Implementation in Operable Segments;
(iii) Five-Year Review Process; and
(iv) Interim Relief Measures.

A fifth element should be added to this strategy as a result of the review of the responses to Network 2011:

(v) Inter-Regional Transit Improvements.

The Network 2011 report recognized that GO Transit improvements would be required; however, the review of the role of GO Transit in the provision of transit service in the Greater Toronto Area has shown that improved GO rail services, together with fare and service integration among the various transit operations, can serve a more significant proportion of the projected growth in travel to and from Metropolitan Toronto. Therefore, the Network 2011 strategy should recognize explicity the important role that GO Transit can play, if it is proven cost-effective, in the future transportation network serving Metropolitan Toronto, particularly the Central Area.

However, as stated throughout this review, the status and cost-effectiveness of the GO Transit improvements are uncertain and, as a result, the rapid transit lines that could be most affected by improvements to the GO rail network, the DRT and EWRT, must still be protected for in the Network 2011 plans. The timing of these lines, the timing of the completion of the Sheppard Subway and the need for other possible rapid transit lines should be reviewed in the formal review process every five years.

F. Summary

The phasing of the rapid transit expansion program is based on a strategy which will: provide continuous, affordable long term funding; open lines every five to seven years; implement interim relief measures as required; implement improvements to the inter-regional transit system; and, review the entire process every five years.

The review of the major issues raised in the responses to the Network 2011 recommendations has indicated that the EWRT and DRT may not be required prior to 2001, if the assumed GO rail improvements are implemented. Even without the GO rail improvement, the decision on the implementation dates of the EWRT and DRT can await the first five year review in 1991-1992.

The early construction of a rapid transit line in the Sheppard/Finch corridor is required to further encourage the development of the Metropolitan sub-centres. The review confirmed that a Sheppard Avenue alignment using subway technology is still the preferred choice in the corridor. An examination of the phasing of the Sheppard Subway determined that the first phase should be from Yonge Street to Victoria Park Avenue, estimated at a cost of $501.3million ($1985). Metro and T.T.C. continue to recommend this segment as Metro's first priority.

The second priority, to be determined in the first five year review will likely be one of the following:

o the DRT from Spadina Avenue to the Danforth or possibly to Thorncliffe Park.

o an initial phase of the EWRT; or

o a second phase of the Sheppard Subway.

Interim measures are intended to be low cost projects which can be implemented in addition to the main stream 2011 projects. The proposed "Kipling connection" for the Mississauga Busway, if approved, is an inter-regional facility which should be built at no cost to Metro or the T.T.C.

Appendices

APPENDIX A

EXTRACTS FROM AREA MUNICIPAL RESPONSES AND LIST OF MAJOR ISSUES RAISED

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1. BOROUGH OF EAST YORK March, 17, 1986

The Council of the Borough of East York, at its meeting held on March 17, 1986, adopted Item No.1, Report No.8 of the Economic Development and Planning Committee regarding "Network 2011: A Rapid Transit Plan for Metropolitan Toronto".

Under this Item, Council approved the following recommendations:

(a) That East York Council support the Downtown Relief Line as the first and highest priority for a new rapid transit line in Metro;

(b) That East York Council support the construction of the Downtown Relief Line to Thorncliffe Park in keeping with the policies of the Metropolitan Toronto Official Plan and the draft East York Official Plan;

(c) That the Toronto Transit Commission examine ways and means which will accelerate the timing for beginning construction of the Downtown Relief Line, such measures to include negotiation of land purchase for the right-of-way; and

(d) That the East York Council advise the Council of Metropolitan Toronto that, if for policy reasons, it chooses to proceed first with a subway along Sheppard Avenue, then at the same time the Metropolitan Toronto Council is requested to make a commitment to construct the Downtown Relief Line within the time frame proposed in the 2011 report or ealier, if possible, using interim relief measures during the intervening period.

2. CITY OF ETOBICOKE September 23, 1985

The Council for the City of Etobicoke, at its meeting held on Monday, September 23rd, 1985, adopted Clause No. 217 of the Eighteenth Report of the Works Committee, 1985, as amended by Resolution No. 308 deleting Part (1) of the above-noted clause. The subject recommendation is as follows:

> THAT the following amended recommendations as contained in a report dated August 27, 1985, from the Commissioner of Planning, and the Director, Traffic and Transportation Division, Works Department, be adopted:

(2) THAT the completion of the Eglinton line should not be delayed beyond the mid 1990's and that it preferably be a rail service and not a busway;

(3) THAT a mechanism be set up for the constant monitoring of travel demand across the Metro West boundary both by transit and on the road system;

(4) THAT the selection of a new rapid transit yard site for the Downtown Line should commence immediately in order that the Westwood site may be released for development at an earlier date inasmuch as prudent economic planning principles would suggest that as long as commitments are made for the eventual completion of the Downtown Line, the selection of a new yard site should not be delayed; and

(5) THAT the Municipality of Metropolitan Toronto be informed of the comments and recommendations of the foregoing report.

At the same meeting, Council, by Resolution No. 309, adopted the following recommendation:

Etobicoke Council does not agree with the immediate construction of the Harbourfront LRT with taxpayers capital dollars. Rather, that Harbourfront LRT funding be sought from other sources.

3. CITY OF NORTH YORK March 24, 1986

The Council of the city of North York, at its meeting held on January 8, 1986, approved the following recommendations:

(a) that the Municipality of Metropolitan Toronto and the Toronto Transit Commission be advised that the City of North York endorses the Network 2011 Strategy which provides for the construction of the Sheppard Subway between Yonge Street and Victoria Park Avenue as a first priority; and

(b) that a public hearing be held on Monday, March 24, 1986 at 8:00 p.m. and that the Toronto Transit Commission and representatives from the Municipality of Metropolitan Toronto be invited to attend, and further that the hearing be advertised in accordance with Council policy.

4. CITY OF SCARBOROUGH February 24, 1986

The Council of the City of Scarborough at its meeting held on February 24, 1986, adopted the following recommendations embodied in the Joint Report of the Works and Transportation Planning Committees.

1. Request Metro Council to take the following actions with regard to the proposed Network 2011 program:
    (a) establish, as its first priority, the construction of the Sheppard Subway Line from an extended Spadina Subway to the Scarborough City Centre;
    (b) not construct the proposed Downtown Rapid Transit Line, at least until the complete Sheppard Line from the Spadina Subway to the Scarborough City Centre is in service;
    (c) support incremental improvements of GO Transit service into Metro as the means of serving growth of travel demand into the Central Area from areas outside of Metro;

(d) support measures for increased integration of T.T.C., GO Transit, and Regional Transit fares and service, as a means of facilitating the forecast increased levels of travel between the surrounding regions and Metro Toronto;

(e) have regard for long term system objectives, including the circumferential concept described in the 1983 T.T.C. Long Range Plan, when establishing future priorities for rapid transit lines. In particular, include the following lines for consideration when establishing a second priority in the 2011 program:

   (i) a northeasterly extension of the Scarborough RT;

   (ii) a north-south rapid transit line in Etobicoke connecting to the Bloor/Danforth Subway and the Bloor/Islington/Kipling Centre and possibly to the Airport;

   (iii) a westerly extension of the Sheppard Subway through northwest North York and northern Etobicoke to connect with the Etobicoke Line and possibly to the Airport;

   (iv) an Eglinton West Rapid Transit Line;

   (v) a Downtown Rapid Transit Line.

2. Request Metro to participate in a joint Metro/Scarborough study of the rapid transit and surface transit options for the Malvern Transit Corridor and of the land use opportunities and implications related to these options. This study should lead to amendments to both the Metro and Scarborough Official Plans to clarify the status of the Corridor and related land use designations, such study to be completed within six (6) months;

3. Request the Minister of Transportation and Communications to:

   (a) make available 75% capital subsidy for the construction of the proposed Sheppard Subway from an extended Spadina Subway to the Scarborough City Centre;

   (b) undertake incremental improvements of the GO Transit system to serve increasing travel demand between the surrounding regions and Metropolitan Toronto; and

(c) seek measures for increased integration of T.T.C., GO Transit and Regional Transit fares and services;

4. Request North York Council to consider a joint North York/Scarborough position on Network 2011 in support of the Sheppard Subway from an extended Spadina Subway to the Scarborough City Centre as first priority in Metro's Network 2011 program; and

5. Submit this report to Metro Council, the Ministry of Transportation and Communications, and the Councils of the other Metro Area Municipalities as Scarborough's detailed comments on the Network 2011 proposal.

5. CITY OF TORONTO April 23, 1986

The Council of the City of Toronto, at its meeting to be held on May 20, 1986, will consider a staff report prepared by the City of Toronto Planning and Development Department and the Department of Public Works.

The staff report recommends:

1. That City Council endorse protecting the option for the Relief Line as a second priority rapid transit route as recommended in the Metro/T.T.C. Network 2011 report and that this option be subject to a comprehensive review in 1992 as part of the five-year review process as also recommended in the Network 2011, report providing that the capacity of the GO Rail system serving the Central Area is improved on an incremental basis and measures are undertaken to integrate the fare and service structures of the T.T.C. and GO Transit systems.

2. That City Council:

(a) support the expansion of the five-year review process identified in

Network 2011 into a formalized structure that includes the establishment of a technical committee with representatives from the Province (MTC), Metro, the T.T.C. and Regional and Area Municipalities, to monitor and assess the requirements and priorities of major transportation improvements within the Greater Toronto Area;

(b) request the Province to expedite the adoption of Official Plans for all the surrounding Regional Municipalities and that the Province co-ordinate the five-year reviews of these plans with the review process identified in recommendation (a) above.

3. That City Council confirm its support of the establishment of a joint City/Metro monitoring program for the Central Area to provide annual reports on trends in land use and transportation relationships.

4. That City Council request the Province to respond to the issues of affordability/subsidies, priorities and short-term regional transit initiatives as they relate to the Network 2011 rapid transit strategy prior to Metro Council giving any further consideration to the Network 2011 proposals.

5. That Council endorse the interim transit measures to serve the Central Area as identified in the Network 2011 report (specifically the Spadina/Harbourfront LRT line, the Sherbourne Express bus and Yonge/Bloor Station improvements) and that other possible transit options (such as the Bay line proposal and surface transit improvements in the Don Valley Corridor) continue to be considered and included in the five-year review process.

6. That City Council support the position of the Commissioner of Public Works that the Wellington Street alignment for the central section of the Relief Line route be the first preference and not the Front

Street/Railway Corridor alignment recommended in the Network 2011 report.

7. That City Council recognize as a priority the need to improve transit services in both the Sheppard and Eglinton corridors and that decisions on the form of these improvements should be made within the context of an established Provincial position on the affordability of such improvements and their relationship to broader Provincial regional transportation planning strategies.

6. CITY OF YORK March 14, 1986

The Council of the City of York, at its meeting held on March 3, 1986, adopted a report entitled "Evaluation of the Network 2011 Report - A Rapid Transit Plan for Metropolitan Toronto which contained the following recommendations:

1. That the Eglinton West Rapid Transit Line be given higher priority;

2. That the Eglinton West Rapid Transit Line be constructed, in its entirety, along an Eglinton Avenue alignment using rail technology and that it be:
   (a) constructed basically underground in the City of York section between Weston Road and the Spadina Subway line;
   (b) Staged as follows:
      (i) Spadina subway to Scarlett Road
      (ii) Scarlett Road to Renforth Drive
   (c) Integrated with the "GO" Transit line at Weston/Eglinton and that the existing Weston "GO" station at Lawrence be retained;

3. That references to the use of the Teperman/Westside Mall site as a potential transit storage and maintenance yard be deleted;

4. That Metro Toronto incorporate a road capacity constraint predictive capability into the Metro travel demand model to assess properly the road system and its impacts on the rapid transit lines;

5. That the priority review process outlined in Network 2011 not be tied to five year periods but be open to earlier review should circumstances warrant;

6. That a joint Provincial/Metro/"GO"/T.T.C. Study be undertaken:
   (a) to do a feasibility study and economic assessment of expanding the Richmond Hill GO line to a full 18 hour bi-directional service on dual trackage with full integration with T.T.C. service at Sheppard Avenue and other suitable locations in Metro Toronto; and
   (b) Study implementation of full service and fare integration between the Toronto Transit Commission, "GO" Transit and other local transit operators involved in inter-regional transit movements into Metro Toronto;

7. (a) That the Ministry of Transportation and Communications (M.T.C.) be requested to form a committee comprised of senior staff representing the M.T.C., Metropolitan Toronto, Toronto Transit Commission, the Cities of Mississauga, Etobicoke and York, and the Region of Peel, to review the Metro Toronto report entitled "Network 2011: A Rapid Transit Plan For Metropolitan Toronto", with specific attention being paid to reviewing the priority proposed for the Eglinton West Transit line; and
   (b) That M.T.C. be requested to review the findings of this Committee and that M.T.C. not take any position on the "Network 2011" study until this review is completed;

8. That this report be forwarded to the Minister of Transportation and Communications, the Municipality of Metropolitan Toronto, the Toronto Transit Commission, the Cities of Etobicoke, Mississauga and Brampton, the Municipality of the Region of Peel and "GO" Transit for their information and consideration; and

9. That this report be made available to ratepayer/resident and business associations in the City of York for their information and response.

7. BOARD OF TRADE OF METROPOLITAN TORONTO February 7, 1986

A cummunication from the President and General Manager, the Board of Trade of Metropolitan Toronto dated February 7, 1986, concluded that "lower cost transit alternatives could be satisfactory and more appropriate than the spending of billions of dollars on a Network rapid transit program where the need cannot be proven. The Board also believes that buses in reserved lanes for each of the three corridors could represent a practical low cost alternative. In addition, we suggest that with the present rates of development, improved GO Transit service and suburban regional transit service could serve a greater role in accommodating transit demand especially for cross-boundary travel where the growth is evidently taking place".

In addition, the Board urges "that public transit improvements be analyzed in the context of overall surface transportation needs. Road improvements must be given appropriate consideration to assure a better level of service operation for Metro's surface transit system".

8. TORONTO REDEVELOPMENT ADVISORY COUNCIL April 22, 1986

The Toronto Redevelopment Advisory Council,although not convinced that Network 2011 is necessary, suggests that "the priorities in the transportation program for the Greater Toronto Area should be:

(a) Increasing GO transit service on existing lines incrementally as the province proposes;

(b) Completing the major road program needs defined by Metro, viz, Gardiner widening with Front Street extension, Leslie Street extension and Finch extension;

(c) Completing Highway 407 along its proposed route between the northward projections of Metro's western and eastern boundaries at a minimum by 1995;

(d) Implementation of Network 2011 on a phased incremental basis to the extent that provincial funding can be made available when the higher priority programs above have been accommodated; all of Network 2011 would be subject to quinquennial review."

The RAC "is strongly supportive of major expenditures in the transportation field as long as the level is not more than the not inconsiderable level obtaining in 1985. It is clear that a political consensus must be achieved among the province and the several municipal jurisdictions as to the priority of implementation of the proposals with those which are needed before those which would simply be nice to have. The RAC view is that GO transit, Highway 407, and Metro road improvements are needed and that some of Network 2011 would be nice to have, once monitoring of actual employment figures defines a much clearer justification than it does at present."

9. REGION OF DURHAM September 11, 1986

At a meeting on september 11, 1985, the Council of the Regional Municipality of Durham received for information Report No.85-147 of the Commissioner of Planning. The following are the Commissioner's comments:

1 None of the studies dealt in detail with the problems of cross boundary traffic, except for the Eglinton Rapid Transit Study which considers traffic to and from Mississauga; and

2 From the Region of Durham's standpoint, it would be preferable if the section of the Sheppard Subway east of Victoria Park were to be completed sooner.

10. REGION OF PEEL October 24, 1985

The Regional Municipality of Peel at its meeting on October 24, 1985, adopted the following resolution:

> "That the Ministry of Transportation and Communications be requested to form a Committee comprised of senior staff representing the Ministry of Transportation and Communications, Metropolitan Toronto, Toronto Transit Commission, the Cities of Mississauga, Etobicoke, York and the Region of Peel, to review the Metro Toronto report entitled "Network 2011: A Rapid Transit Plan for Metropolitan Toronto", with specific attention being paid to reviewing the priority proposed for the Eglinton West Transit Line;
>
> And further, that the Ministry of Transportation and Communications be requested to review the findings of this Committee, and that the Ministry of Transportation and Communications not take any position on the Network 2011 Study until this review is completed;
>
> And further, that this Committee be chaired by a senior staff member of the Ministry of Transportation and Communications;
>
> And further, that the Ministry of Transportation and Communications call the first meeting of this new Committee as soon as possible;

And further, that the Region of Peel's representative on this Committee be the Commissioner of Planning;

And further, that the Cities of Brampton, Mississauga, Etobicoke and York be requested to support the recommendations in paragraphs 1, 2, 3 and 4 set out above and advise the Ministry of Transportation and Communications of their position;

And further, that a copy of the Regional Planning staff's report entitled "The Urgent Need for the Eglinton West Rapid Transit Line" be forwarded to the Ministry of Transportation and Communications, Metropolitan Toronto, the Toronto Transit Commission, 'GO' Transit, the Cities of Brampton, Mississauga, Etobicoke and York and to the Members of the Provincial Parliament representing Metro and Peel for information.

11. REGION OF YORK March 13, 1986

The Council of the Regional Municipality of York at its meeting held on March 13, 1986, adopted without amendment Clause No.10 of Report No.5 of the Engineering Committee entitled "Proposed Rapid Transit Plan" which contained the following recommendations:

(1) in response to The Municipality of Metropolitan Toronto's and Toronto Transit Commission's report "Network 2011 - A Rapid Transit Plan for Metropolitan Toronto", the Municipality of Metropolitan Toronto, the Toronto Transit Commission and the Ministry of Transportation and Communications be forwarded a copy of this report and referred again to Clause 12 of Report No.8 of the Engineering Committee (adopted by Regional Council on April 26, 1984) to reiterate to them that the joint position of the Regional Municipality of York and the Towns of Markham, Richmond Hill and Vaughan on the location of an east/west rapid transit line north of Highway 401 in Metro is that such a line should be located in the Finch Hydro Right-Of-Way Corridor;

(2) the Municipality of Metropolitan Toronto, the Toronto Transit Commission and the Ministry of Transportation and Communications be advised that The Regional Munucipality of York is opposed to a Sheppard Avenue Subway on the basis that this would make the implementation of a future rapid transit line in the Finch Hydro Right-Of-Way Corridor impractical both financially and operationally;

(3) the Ministry of Transportation and Communications be urged to only finance or subsidize the cost of an east/west rapid transit line in North Metro if it is located in the Finch Hydro Right-Of-Way Corridor where it can serve an inter-Regional transit need as well as an internal need for north Metro; and

(4) should a decision be made to proceed with the Sheppard Avenue Subway, despite the joint position of The Regional Municipality of York, and the Towns of Markham, Richmond Hill and Vaughan, the Ministry of Transportation and Communications be requested to develop an augmented inter-Regional rapid transit plan to better serve York Region and its travel interchange with Metropolitan Toronto. An interim scheme might be to develop a busway on the Finch Hydro Right-Of-Way Corridor as outlined above in the text of this report.

12. CITY OF MISSISSAUGA September 23, 1985

On September 23, 1985, Council of the City of Mississauga approved the following resolution:

(a) That the part of Network 2011 which supports the proposed Mississauga busway, connected initially to the Bloor subway and ultimately to the proposed Eglinton line be endorsed;

(b) That the appropriate Provincial, Metropolitan Toronto and Toronto Transit Commission agencies be requested to program the construction of the Eglinton Rapid Transit Line, between Renforth Drive and the Spadina line, for completion in the mid-1990's using a design that will be consistent with the proposed Mississauga Busway;

(c) That the appropriate Provincial Metropolitan Toronto and Toronto Transit Commission agencies be requested to invite representatives from Mississauga to participate in all current and future studies regarding the Eglinton line, the extension of the Mississauga busway into Metro Toronto (including the interface at Kipling Station), and travel demands across the Mississauga/Metro Toronto boundary; and

(d) That Metropolitan Toronto and the Toronto Transit Commission be requested to review the employment assignment to Mississauga on which Network 2011 is partially based.

13. TOWN OF MARKHAM April 16, 1986

The Council of the Town of Markham at its meeting held on April 8, 1986, adopted the following resolution:

> "Resolved that the report dated April 8, 1986 from the Transit Coordinator with respect to Region of York comments on "Network 2011 A Rapid Transit Plan for Metropolitan Toronto", be received;
>
> And that Clause 10 of Report No.5 of the Regional Engineering Committee, entitled "Proposed Rapid Transit Plan (for Metropolitan Toronto) objecting to recommendations contained in the joint report of the Municipality of Metropolitan Toronto and the Toronto Transit Commission, entitled "Network 2011 - A Rapid Transit Plan for Metropolitan Toronto" which Clause was adopted by Regional Council on March 13, 1986, be endorsed by the Council of the Town of Markham;
>
> And that the Ministry of Transportation and Communications be so advised."

Exhibit A-1

LIST OF MAJOR ISSUES RAISED

ISSUE	RAISED BY
West Metro Boundary	
Capacity Deficiency on Bloor-Danforth line by the late 1990's	Etobicoke Regional Municipality of Peel Mississauga
Maximum (2011) peak point demand on EWRT highest of 3 lines considered	Etobicoke Regional Municipality of Peel Mississauga
Expanded GO Transit services will not serve majority of cross-boundary destinations	Etobicoke Regional Municipality of Peel Mississauga
Limited opportunity to expand cross boundary road capacity	Etobicoke Regional Municipality of Peel Mississauga
Development Objectives	
Early release of Westwood Theatre site essential for development of Kipling/Islington Centre	Etobicoke
Development of North Yonge and Scarborough City Centres not dependant on rapid transit until late 1990's	Etobicoke Regional Municipality of Peel
The DRT line is inconsistent with Metroplan	Scarborough Regional Municipality of Peel
Network 2011, as proposed will undermine the decentralization process	Etobicoke Scarborough York Regional Municipality of Peel
City of York Planning Transportation & Development objectives are not adequately addressed by 2011	York
Inconsistent approach used to evaluate transit improvements and land use planning	York

LIST OF MAJOR ISSUES RAISED (Continued)

ISSUE	RAISED BY
Role of GO Transit	
Incremental up-grading of GO services to the Central Area	Toronto
Timing of DRT not as sensitive as EWRT - surface improvements & GO Transit improvements may delay need for DRT	Etobicoke Regional Municipality of Peel
West Metro boundary traffic can be served by increases in Go service	Scarborough
Inter-Regional function of EWRT not fully assessed	York Regional Municipality of Peel
Upgraded north-south GO services effect the timing of S/FRT and DRT	York Regional Municipality of Peel
DRT/GO/TTC capacity problems at Union Station	Toronto Regional Municipality of Peel
Fare and Service Integration	Etobicoke Scarborough Toronto York Regional Municiplity of Peel Regional Municipality of York Town of Markham
Land Use and Travel Demand Forecasts	
Ridership forecasts for 2001 on the DRT overstate potential ridership, therefore, the DRT will not be required before 2001	Scarborough
Revised 2011 ridership estimates show DRT will not be required by 2011	Scarborough
Ridership estimates effected by computer model deficiencies	York Regional Municipality of Peel

LIST OF MAJOR ISSUES RAISED (Continued)

ISSUE	RAISED BY
Modal split changes: EWRT vs. S/FRT	Regional Municipality of Peel
Malvern RT should be considered a local priority as per Harbourfront/Spadina LRT	Scarborough
Network	
Network 2011, as proposed does not lead to a comprehensive metro-wide network	Scarborough
Unequal weighting of evaluation criteria adversely affected EWRT timing	York
Negating effect on T.T.C. operations by S/FRT.	York Regional Municipality of Peel
EWRT recommendation not consistent with Mississauga busway	Mississauga
DRT should be the first priority and extended to Thorncliffe Park	East York
S/FRT in Finch hydro R.O.W.	Regional Municipality of York Town of Markham
Cross-boundary feeder bus services	Town of Markham
DRT as the second priority	Toronto
Provincial participation in five year review process	Toronto
Wellington Street Alignment for the DRT	Toronto

APPENDIX B

LIST OF OTHER RESPONDING AGENCIES

OTHER RESPONDING AGENCIES

A. AGENCIES WITH MINOR COMMENTS:

Ministry Of The Environment - Ontario (July 24, 1985)
The amount and impact of diesel exhaust emissions from the proposed busways has not been considered and compared with other alternatives. The noise and vibration impacts of the recommended and other alternatives should be documented.

Ministry of Citizenship and Culture - Ontario (September 17, 1985)
Concerned with respect to archaeological and above ground heritage resources especially along proposed alignments of the different options.

Metropolitan Separate School Board (February 26, 1986)
The Separate School Board requests Metropolitan Toronto to prepare an environmental impact assessment of the transit routes on schools located adjacent to the transportation corridor.

Board of Education for the City of Scarborough (January 16, 1986)
The Board has concerns regarding the impact on C.D. Farquharson Junior Public School site on Brimley Road, if the rapid transit system were to be implemented at grade level along Brimley Road.

Board of Education for the City of Toronto (December 16, 1986)
The Board expects effects resulting from the construction of the DRT on public schools in the vicinity of its corridor.

Jim Henderson - MPP Humber (September 18, 1985)
Network 2011 should be radically re-thought with a view to expansion of rapid transit serving the City of Etobicoke.

B. AGENCIES WITH NO COMMENTS:

Ministry of Indian and Northern Affairs - Canada (June 27, 1985)
Ministry of National Defence - Canada (November, 1985)
Ministry of Industry and Trade - Ontario (July 15, 1985)
Ministry of Government Services - Ontario (August 19, 1985)
Ministry of Health - Ontario (November 14, 1985)
Metropolitan Toronto School Board (November 27, 1985)

APPENDIX C

SUMMARY OF UPDATED DEMAND ANALYSIS

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1. Introduction

This technical appendix has been prepared to address the concerns expressed with respect to the travel demand projections used in the Network 2011 report. These concerns relate mainly to the impact of revised land use forecasts prepared by the Metropolitan Planning Department subsequent to publication of Network 2011, the general capabilities of the Metro Travel Demand Model in producing forecasts and, in particular, the Network 2011 projections of future GO rail ridership. These issues are addressed in detail in this appendix.

2. Model Description

2.1 General Parameters

The travel demand model used to produce the demand projections utilizes a conventional four-step (generation, distribution, mode split and assignment) main-frame computer package. The generation of productions and attractions for 24 hour home to work trips is based on projections of employed labour force (as a proportion of population), and employment; these land use projections are the most critical input to the entire modelling process and depend on various assumptions as to level of future development and transportation services, fertility and migration rates, labour force participation, etc. The ultimate accuracy of the assumptions may be affected by changes in the political or economic climate, and other factors beyond the planners' control.

The trip distribution step uses a gravity model formulation based on 1981 Census place of residence/place of work data using simulated origin-destination (O-D) travel times by auto and transit. The distribution does not take into account the compatibility of labour force with employment, thus it is possible for individual zonal interchanges to be over or under simulated (for example, for origin zones with a large blue-collar labour force and destination zones with largely white-collar employment). However, in aggregate, the trip distribution closely replicates observed 1981 trip making patterns.

The estimation of mode split between auto and transit trips employs a "logit" formulation based on 1980 survey data, to which are input simulated O-D travel times and costs for each mode. This is felt to provide an accurate representation of the two-mode choice situations.

The calculation of GO rail and subway park'n'ride trips (for those zones where the choice is available) is not based on mathematical relationships, due to a lack of sufficient data, but uses empirical factors derived from limited ridership survey data. Originally, the model was formulated to calculate GO rail trips as a proportion of the "auto" trips following application of the logit mode split formula to the total person trip table. For future scenarios where improved surface and rapid transit would cause a significant modal shift, this approach resulted in an undersimulation of the GO trips. The present method calculates GO rail as a proportion of total trips, and thus reduces the undersimulation. The effects on GO ridership of significant improvements in GO rail service, or of the introduction of competing rapid transit lines, or of service and/or fare integration with local transit, are not explicitly modelled, but must be addressed using manual analysis techniques.

Following mode split, a series of factors are applied to convert the 24-hour home-to-work trips to a.m. peak hour all purpose trips. The a.m. peak hour was selected for simulation as it has been shown to be more critical for travel, and transit ridership in particular, than the p.m. peak hour. The factors were developed from a 1979 survey of Metro residents, and while they reflect differences by geographic area of destination, and by trip distance (non-work trips tend to be shorter than work trips), they do not reflect variations in household structure as they may affect non-work (mostly school) trip rates, particularly for the Regions outside Metro. Since the non-work trips are calculated as a proportion of work trips, but are less sharply biased towards the centre of the study area than the work trips, the model tends to undersimulate non-work trips in the off-peak direction. However, since the analysis concentrates on peak hour, peak direction demand, this is not a major problem.

Finally, the O-D trips by mode are assigned to the appropriate networks representing the transportation facilities assumed to be in place by the target year. The transit and GO rail trips are assigned to computed minimum time paths between each origin and destination; transfers to transit lines are assigned a delay of half the headway, with an additional penalty for transfer to a GO rail or rapid transit line. The transit assignment technique has been shown to provide reliable assignments to major rapid transit facilities; assignments to individual surface transit routes are best analyzed by combining them into corridors or screenlines. Auto vehicle trips, calculated by applying occupancy factors to the auto person trips, are also assigned on a minimum path, all-or-nothing basis; that is, all trips from a specific origin to the same destination are assigned to the same path. The minimum paths are computed on a specified combination of the input time and distance on each link. The demand model is capable of performing capacity restraint auto assignments, in which travel speed is adjusted according to the volume of traffic assigned, but these have not been used in the Network 2011 projections where the prime focus was on transit demand. It is also theoretically possible to re-cycle the trip distribution and mode split calculations using adjusted travel times from a capacity restraint assignment, as has been suggested by the City of York, but due to the extra time and the high cost of the data processing involved, this is not normally done.

While the all-or-nothing minimum path assignment techniques for both transit and auto trips can assign flows in excess of the theoretical capacity on individual facilities, they do give a good indication of where future travel desires will occur, and hence, where the potential capacity deficiencies will be. A capacity restraint assignment, by spreading demand over multiple routes according to the available capacity, can tend to mask where the deficiencies are, and does not give reliable results for corridors where potential demand significantly exceeds the capacity available. All-or-nothing assignments are very useful for comparing existing and alternative future transportation and/or land use scenarios on a corridor, screenline or major facility basis without encountering the high costs and possible distortions of capacity restraint assignments.

A criticism of the model forecasts by several agencies relates to both the mode split and all-or-nothing assignment techniques, and suggests the over-assignment (relative to road capacity) of auto trips at some screenlines, most notably the Peel/Metro boundary, indicates an under-estimation of "forced modal shift" and, hence, transit ridership. As noted, a dynamic mode split/capacity restraint assignment technique to address this problem is not practical. However, the issue has been addressed in a static way during the development of road and transit networks for the GO-ALRT and Network 2011 forecasts. In all cases, road speeds in the "inner suburban area" (bounded by the Humber River, Highway 401 and Victoria Park Avenue) were reduced by 5 km/h while transit speeds remained constant, to reflect both increasing road congestion and the potential impacts of possible transit express services and priority techniques.

It should also be noted that at least one review has concluded that the model forecasts for future transit demand are optimistic. A sub-study of the GO-ALRT Northern Section Study conducted by Tranplan Associates and Read Voorhees and Associates [1.] to assess the various travel demand estimates in the GO-ALRT Northern corridors, concluded that the forecasts produced by the various Regional models, including Metro's, over-estimated transit travel demand. This conclusion was based on the following observations:

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1. GO-ALRT Northern Section Travel Demand Sub-Study: Assessment of Demand Analysis. Tranplan Associates and Read Voorhees and Associates, December, 1984.

(i) all the models assumed extensive high transit service levels within the Region of Peel and the southern portion of the Region of York;

(ii) the modal split increases for Peel and York were quite high compared to current levels;

(iii) assignments have predicted some trips on the (Northern) line that are likely to find other parallel transit services more logical; and

(iv) not all the model networks have fully accounted for other major transit facilities, such as GO Transit improvements, that could be in place in the future.

Therefore, the forecasts of inter-regional travel demand from the Regions must be reviewed carefully because of the high modal split increases (compared with existing conditions) predicted as a result of the assumed extensive local transit networks, which in some areas, are comparable to existing T.T.C. service levels in the City of Toronto.

The model does not have components which explicitly simulate trips with origins or destinations outside the study area, or vehicles other than private autos such as trucks and buses. These must be allowed for separately, if required, either by generating and assigning them on an O-D basis or by applying factors based on empirical observations at specific locations or at screenlines.

To summarize, the accuracy of the final assigned auto and transit link volumes depends on the accuracy of the input assumptions (land use and network characteristics), on the mathematical relationships employed, and on the level of detail of the zone systems and the networks. Changes in any of the model parameters would yield a somewhat different final result. Thus, while the absolute values of the link assignments are subject to a degree of uncertainty, the strength of the model is in facilitating a valid comparative analysis between different time periods, different land use scenarios and/or different transportation configurations, providing that the input assumptions are developed on a consistent basis.

Thus, despite its recognized shortcomings, the present version of the Metro Travel Demand Model is the best available tool for the purpose. It was built on 20 years of previous experience with demand modelling in the Greater Toronto Area, but was developed with up-to-date survey and Census data, and makes use of state-of-the-art mainframe computer modelling and analysis techniques. The modelling process has been updated and refined as new techniques and data have become available. Transportation Division staff intend to undertake a Systems Analysis Review in the near future, with the object of identifying ways of overcoming the deficiencies of the existing modelling process, and of investigating new techniques in the microcomputer field which have the potential of both reducing processing costs and providing a more flexible and accessible modelling capability.

A comprehensive Greater Toronto Area travel habits survey is planned for the fall of 1986. Together with the 1986 Census, this will provide valuable additional data for the updating and further refinement of the travel demand model. In particular, it is expected that this region-wide data base will yield more comprehensive information on the choice between auto, transit and GO rail, and lead to an improved GO ridership forecasting methodology. Any improvements resulting from the survey will be incorporated into the Systems Analysis Review process.

2.2 Networks

The assumed year 2011 transit network for the Base Case, "System B", within Metro Toronto was based on existing T.T.C. routes and levels of service, with some extension of routes and improvement of service to new population and employment areas in the suburbs. No new rapid transit was assumed, other than completion of the Scarborough R.T. line. For Peel and Halton Regions, a transit network developed for the Mississauga Transportation Study by Peel staff was used, to reduce coding effort and to facilitate comparison with the results of Peel's model. This network assumed a greatly intensified grid system of surface transit routes, compared to what exists today; in many areas the density and frequency of transit service assumed was greater than for similar areas within Metro. For York Region, between Steeles Avenue and Major Mackenzie Drive, a transit network was developed by Metro staff that was essentially an extension of the Metro network, with full integration of service. Thus, the density and level of service assumed north of Steeles Avenue was comparable to that immediately south of Steeles. For northern York region and for Pickering/Ajax, a less intensive transit network, though still a significant improvement over the existing situation, was developed, with direct connections to Metro.

The GO rail network assumed intensified service on the Lakeshore line (15 minute effective headway), and full service (20 minute rush hour headway) on the Milton, Georgetown and Richmond Hill lines. GO-ALRT links from Oakville to Hamilton and Pickering to Oshawa were assumed. The Bradford and Stouffville lines were not simulated. Note that the GO levels of service affect only trip distribution to a limited extent, and are not explicitly considered in the mode split process.

For System 3, the following new rapid transit lines were assumed:

- An Eglinton West line, from Square One in Mississauga via Highway 403 and Eglinton Avenue to the Eglinton West subway station;
- A Sheppard line from an extended Spadina Subway to Scarborough City Centre;
- A Downtown line from Pape Station to Spadina Avenue via Union station;
- A Spadina Avenue LRT line from Bloor to Queen's Quay, connecting with the Downtown line;
- A Highway 410 line from Highway 403 to Brampton; and
- Regional (GO-ALRT) lines from Square One to Hamilton and from Scarborough City Centre to Oshawa.

The System 3 surface transit network was basically the same as for System B, with surface services reduced where in competition with rapid transit, and some routes reoriented to feed the rapid transit lines. The GO rail network was the same as in System B.

For both the System B and System 3 model runs, the same road network was used, based on that used to calibrate the model for 1980 and intended to represent existing conditions, with the following modifications:

- New Metro road links, including completion of the Finch Avenue West connection from Islington Avenue to Mississauga; Steeles, Finch and Lawrence Avenue East connections to arterial roads in Pickering; Leslie Street extension from Eglinton Avenue to Bayview Avenue;
- New freeways including Highway 407 from Highway 410 to the East Metro Freeway; East Metro Freeway (east of Morningside Avenue) between Highways 401 and 407; Highway 404 extension to Highway 9; Highway 427 extension to Highway 7;
- A road network for Peel and Halton was adapted from the Mississauga Transportation Study, with a number of new and extended arterial roads;
- A new road network for York Region and Pickering/Ajax, developed on a similar philosophy to that for the transit network;
- Assumed peak hour speeds on arterial roads in Metro within an inner suburban ring (roughly bounded by the Humber River, Highway 401 and Victoria Park Avenue, but outside the inner urban area), and within the vicinity of the North York and Scarborough Civic Centres, were reduced by 5 km/h compared with those assumed in the 1980 calibration. Speeds on arterial roads in the rest of Metro and on the freeway system were assumed to be the same as for 1980.

3. Land Use Review

For the demand model runs referred to in the Network 2011 report, land use projections for 2011 developed for the Provincial GO-ALRT studies were used. The GO-ALRT 'A' scenario was based on municipal and regional aspirations, and is now generally acknowledged to have been overly optimistic in terms of employment and population for the G.T.A. as a whole. However, it was commonly accepted as the basis of a number of transportation studies initiated in Metro and the adjoining Regions in 1983/84, notably the Eglinton West and Downtown Rapid Transit Studies, the Sheppard/Finch Rapid Transit Corridor Study, the Mississauga Transportation Study and the Markham Transportation Study. The original population and employment projections were on a municipality basis, and were disaggregated to traffic zones by local planning staff. Labour force participation rates were applied to the population on a municipal basis to generate employed labour force. The method used for disaggregating to traffic zones is now believed to have led to some inaccuracies in the relative distribution of population and employment among traffic zones within specific municipalities.

Subsequent to the publication of Network 2011 and its background reports, the Metropolitan Planning Department Research Division has generated a revised 2011 land use forecast referred to as M1-85, using a newly developed land use forecasting model. This model makes use of detailed demographic and employment data from various surveys and from the Census, and produces projections of population, labour force and employment for individual traffic zones, based on a given set of assumptions with respect to fertility, migration, labour force participation, etc. These "bottom up" projections are felt to have a sounder basis than previous, "top-down" projections such as GO-ALRT 'A'.

A comparison of the GO-ALRT 'A' and M1-85 land use forecasts is shown in Exhibit C.1. A reference map of the zone system used is shown in Exhibit C.2. Overall, the M1-85 forecast is more conservative than GO-ALRT 'A', with approximately 259,000 lower population and 205,000 lower employment for the entire Census Metropolitan Area (C.M.A.). The major differences are in the Toronto Central Area (P.D.1), with 42,000 greater population and

12,000 greater employment, and Peel/Halton, with 150,000 lower population and 83,000 lower employment. Within Metro, outside the Central Area, population is projected to be about 101,000 lower than GO-ALRT 'A', while employment is projected to be about 81,000 lower.

A third land use forecast developed by the Region of Peel and used in the Mississauga Transportation Study (shown in Exhibit 3.1 of the body of the report), projects lower population and higher employment levels for Peel than does GO-ALRT 'A'. This forecast may be seen as the ultimate level of development anticipated for the Region, but is not considered by Metro staff to be a realistic estimate for the year 2011. While the Peel land use forecast was not used for the Metro model projections, it is important to note that, if the Peel forecast did actually occur by 2011, the lower population level for Peel would generate less overall transit demand from Peel to Metro, while the higher employment estimate would result in more Peel residents working in Peel which, taken together, would ultimately result in fewer trips crossing the West Metro boundary than would be generated by the GO-ALRT 'A' land use forecast.

4. Model Runs with Revised Land Use

4.1 Trip Distribution

In the response submitted by the City of Scarborough, it was suggested that, if the revised land use projections were applied to the Network 2011 forecasts, the resultant transit assignments to the Downtown Relief Line would be reduced to the point that this line could not be justified by 2011.

In order to assess the implications of the revised land use projections on all of the rapid transit lines recommended in Network 2011, and to address the concerns raised by Scarborough, the demand model was re-run for the "System B" (Base Case) and "System 3" networks, using the M1-85 projections in place of GO-ALRT 'A'. All of the other model parameters and network characteristics were held constant.

The effects of the revised land use projections on trip distribution are shown in Exhibit C.3. Total regional a.m. peak hour trips decrease by almost 82,500 or 8.1%. To the Central Area, total trips remain virtually unchanged (noting that short-distance intra-zonal trips are not accounted for), although the distribution of origins shifts, with 9,200 more trips (28.2%) from the Central Area, 7,300 fewer trips (5.4%) from the rest of Metro and 2,300 fewer trips (7.4%) from Peel and Halton. Further detail on the Central Area trip distribution, including a comparison with simulated 1981 total person and transit trips is shown in Exhibit C.4.

Tranplan Associates, on behalf of the City of Scarborough, had calculated revised trip tables for a.m. peak hour total person and transit person trips by factoring the original GO-ALRT 'A' trip tables using a simple 'Fratar' technique to reflect the M1-85 projections. The resulting trip tables were somewhat different from those produced by re-running the travel demand model through trip generation, distribution and mode split using the M1-85 land use. This is due partly to the less sophisticated Fratar factoring process, and partly to the fact that the consultant factored trip origins according to the original and revised 26 district population forecasts, whereas the travel demand model trip distribution used the employed labour force projections as produced directly at the traffic zone level by the land use projection model. The latter gave rise to different average labour force participation rates than those applied to the GO-ALRT 'A' population projections and hence implied in the Tranplan projections.

Exhibit C.5 compares, on a six district basis, the 2011 System 3 a.m. peak hour total person trips and total transit (including GO rail) trips from the model runs for the M1-85 land use with the Tranplan estimates for M1-85. The numbers from the model and from the Tranplan factoring procedure differ by up to 7%, with the exception of those involving Ajax/Pickering and East Halton which show greater differences. The trips to Planning District 1 from the six districts are within 2%, except from Ajax/Pickering and Halton, where the Tranplan numbers overestimated trips to P.D.1 by about 7%. The

Fratar factoring technique is not reliable for zones where there is a substantial change in trip productions or attractions.

Thus, the comparisons made by Tranplan in the Scarborough response between the M1-85 and GO-ALRT 'A' trips to P.D.1 from other parts of the region are generally accurate; however, as discussed following, the reduction in ridership simulated by the model on the Downtown line is less than that estimated by Tranplan.

4.2 Model Assignments

The resulting rapid transit assignments for the GO-ALRT 'A' and M1-85 scenarios are compared graphically on Exhibit C.6 for the Base Case and Exhibit C.7 for System 3 which are based on Exhibits 3.1 and 3.2 from the Network 2011 report, and show assignments for a number of representative rapid transit links. A tabular comparison of both networks is shown in Exhibit C.8. The flows produced by the demand model have been increased by 15 per cent. to represent the peak season demand, in line with the figures presented in Network 2011.

The effect of the revised land use is to reduce the simulated demand on most parts of the rapid transit system for both the Base Case and System 3, with the exception of the southbound Yonge Line north of Bloor which shows increases ranging up to 6%. The peak point demand on Yonge south of Bloor shows a 1% decrease for the Base Case and no change for System 3; on the University line, the peak point demand decreases by 7% in both cases. The eastbound peak demand on the Bloor-Danforth Line decreases by about 10 per cent. in both cases, and the westbound peak east of Yonge decreases by about 7% in each case. On the proposed new lines included in System 3, demand on the Eglinton Line within Metro decreases by about 6%; on the Sheppard Line, demand decreases by 10% to 12%, and on the Downtown Line, peak point demand decreases by 14%, although other links decrease by as little as 5%.

Exhibit C.9 summarizes the assignments by mode at various cordons (which are shown on Exhibit C.10) for both the GO-ALRT 'A' and M1-85 land use scenarios. These assignments have been factored to account for trips with origins or destinations outside the study area. They do not include the 15% additional factor to represent peak season demand. Compared to the GO-ALRT 'A" System 3 forecasts, M1-85 person trip volumes decrase by 8.01% at the Boundary Cordon, 2.63% at the Suburban Cordon and 5.63% at the Central Area Cordon. The largest forecast screenline decrease is 10.56% at the West Metro Boundary Screenline.

5. Analysis of Upgraded GO Rail Services

The Network 2011 Study forecast of future transit ridership on the System 3 rapid transit network included an improved level of service for existing GO rail services; however, due to the process used in the Metro Model, GO Transit ridership in the Network 2011 forecasts is likely underestimated and some of the ridership that could be expected to use GO Transit was assigned to the Network 2011 rapid transit lines.

A number of the responses to the Network 2011 recommendations noted that if the existing GO rail services were up-graded, a significant proportion of the growth in travel from the surrounding Regions to the Central Area could be accommodated on GO Transit rather than on the expanded Metro rapid transit network. The net effect of the diversion of trips to GO Transit could be the possible deferral of the rapid transit lines recommended in Network 2011.

This section examines potential future ridership increases on Western GO rail lines (Lakeshore, Milton and Georgetown), derived from the West Metro Boundary Transportation Review, and the Richmond Hill GO Line and reviews the possible impacts on both the existing rapid transit system and the rapid transit facilities recommended in Network 2011.

5.1 Service Assumptions and Approach

GO rail service is assumed to be upgraded to provide competitive service to the Central Area:

- full bi-direction service, 10-minute headways on Lakeshore West and Milton lines, 20-minute headways on Georgetown and Richmond Hill lines during the peak periods;
- station locations modified to provide convenient transfers from T.T.C. and regional local transit;
- fare integration between GO and T.T.C.

Bradford and Stouffville GO services are upgraded to provide improved peak period service with improved station access and fare integration with T.T.C.

The first step in the process was to identify those riders for whom GO rail services would offer an improved travel time over local rapid transit. Because decisions on individual mode choice consider factors in addition to time (such as convenience, cost, etc.), the estimate was considered to be the maximum potential. It was then assumed that the most likely estimate of the change in assignment from local transit to GO would be 50% to 75% of the aforementioned maximum.

The travel times by GO and T.T.C. were compared to determine the locations in the Central Area which could be accessed faster via GO rail than via local bus services and the T.T.C. The origin-destination trip tables for the planning districts served by the western and north-south GO services were examined to isolate the existing or forecast trips destined for the Central Area (P.D. #1). A factor representing the area of P.D. #1 that could be served faster by GO was applied to the trip table value to calculate the maximum possible diversions to GO transit from each origin planning district. The probable diversion potential represents a likely range (50% to 75%) of the total diversion potential that could actually be realised.

5.2 Western GO Rail Improvements

The impact of improved GO rail services on east-west rapid transit facilities is shown in Exhibit C.11, for two separate scenarios. The first case shows the impacts of improved GO rail services on 2011 Base Case Bloor subway ridership and indicates a diversion potential of 4,300 - 6,500 A.M. peak hour trips at the peak load point. The resultant Bloor line peak point ridership of 33,100 - 35,300 is close to the practical subway capacity of 34,000 pphpd and, by implication, indicates that Bloor subway capacity will not be exceeded prior to 2001, and may not be reached by 2011.

The second case shows the impacts of GO rail improvements on 2011 System 3 Eglinton Rapid Transit ridership at both the boundary and at the peak load point west of Spadina Station. The potential diversion of 3,000 - 4,400 A.M. peak hour trips results in net ridership on the EWRT of 7,000 - 8,400 pphpd at the boundary and 13,200 - 14,700 pphpd at the peak point. The analysis indicates that, while a significant proportion of cross-boundary trips could be diverted from the Eglinton line with improved GO rail services, peak point demand remains within the range that could justify some type of rapid transit in the future.

5.3 North-South GO Rail Improvements

To assess the current situation, the possible diversion from existing T.T.C. bus services in the Sheppard/Finch corridor to an upgraded Richmond Hill GO rail line were examined. The travel time comparison identified that approximately 73% of the Central Area is accessible faster via the improved GO service than via existing T.T.C. services in the Sheppard/Finch corridor. Exhibit C.12 details the diversion potential to GO from the T.T.C. services. A maximum possible diversion of 2,300 A.M. peak hour riders was identified, with a probable range of 1,200-1,700.

Exhibit C.13 summarizes the impacts of GO rail improvements on both the 2011 Base Case (Yonge Line) and System 3 (Sheppard Line) peak point ridership estimates. For the 2011 Base Case, the net ridership of 35,600 - 37,400 exceeds practical subway capacity of 34,000, but implies that Yonge Line capacity may not be reached by 2001 and could affect the implementation timing of the proposed Downtown Rapid Transit Line. Diversion from the Sheppard Line, estimated in the 1,600 - 2,300 range is more limited, and results in a net Sheppard A.M. peak point ridership for 2011 of 13,100 -13,800.

EXHIBIT C.1

YEAR 2011 POPULATION AND EMPLOYMENT COMPARISON

	POPULATION				EMPLOYMENT			
DIST	M1-85	GO-ALRT A	DIFF	% DIFF	M1-85	GO-ALRT A	DIFF	% DIFF
P.D.1	183,661	141,700	+41,961	+29.6%	470,721	458,300	+12,421	+2.7%
2	184,977	198,300	-13,323	-6.7%	53,408	52,425	+983	+1.9%
3	208,495	221,500	-13,005	-5.9%	90,174	103,050	-12,876	-12.5%
4	183,973	191,800	-7,827	-4.1%	107,886	110,750	-2,864	-2.6%
5	107,441	116,700	-9,259	-7.9%	70,220	86,500	-16,280	-18.8%
6	180,403	203,100	-22,697	-11.2%	46,415	46,200	+215	+0.5%
7	61,978	54,200	+7,778	+14.4%	26,586	35,850	-9,264	-25.8%
8	162,396	179,500	-17,104	-9.5%	81,212	81,580	-368	-0.5%
9	72,282	70,100	+2,182	+3.1%	71,251	77,870	-6,619	-8.5%
10	131,253	143,200	-11,947	-8.3%	106,071	121,500	-15,429	-12.7%
11	155,785	149,300	+6,485	+4.3%	63,954	74,400	-10,446	-14.0%
12	72,532	82,500	-9,968	-12.1%	34,758	37,200	-2,442	-6.6%
13	177,599	192,200	-14,601	-7.6%	130,202	138,550	-8,348	-6.0%
14	65,117	62,900	+2,217	+3.5%	9,207	7,400	+1,807	+24.4%
15	79,689	69,000	+10,689	+15.5%	13,529	11,300	+2,229	+19.7%
16	161,096	171,400	-10,304	-6.0%	57,486	59,200	-1,714	-2.9%
2-16	2,005,016	2,105,700	-100,684	-4.8%	962,359	1,043,775	-81,416	-7.8%
METRO	2,188,677	2,247,400	-58,723	-2.6%	1,433,080	1,502,075	-68,995	-4.6%
17	152,078	126,000	+26,078	+20.7%	41,400	51,300	-9,900	-19.3%
DURHAM	152,078	126,000	+26,078	+20.7%	41,400	51,300	-9,900	-19.3%
18	182,991	215,000	-32,009	-14.9%	71,700	89,700	-18,000	-20.1%
19	167,421	210,000	-42,579	-20.3%	87,500	100,300	-12,800	-12.8%
20	189,323	191,000	-1,677	-0.9%	68,500	81,000	-12,500	-15.4%
YORK	539,735	616,000	-76,265	-12.4%	227,700	271,000	-43,300	-16.0%
21	82,848	74,800	+8,048	+10.8%	22,820	27,000	-4,180	-15.5%
22	542,690	624,499	-81,809	-13.1%	207,660	216,094	-8,434	-3.9%
23	34,600	34,700	-100	-0.3%	104,520	126,900	-22,380	-17.6%
24	374,948	385,999	-11,051	-2.9%	137,840	180,000	-42,160	-23.4%
PEEL	1,035,086	1,119,998	-84,912	-7.6%	472,840	549,994	-77,154	-14.0%
25	137,996	199,000	-61,004	-30.7%	60,300	74,000	-13,700	-18.5%
26	85,458	89,900	-4,442	-4.9%	26,060	17,800	+8,260	+46.4%
HALTON	223,454	288,900	-65,446	-22.7%	86,360	91,800	-5,440	-5.9%
C.M.A.	4,139,030	4,398,298	-259,268	-5.9%	2,261,380	2,466,169	-204,789	-8.3%

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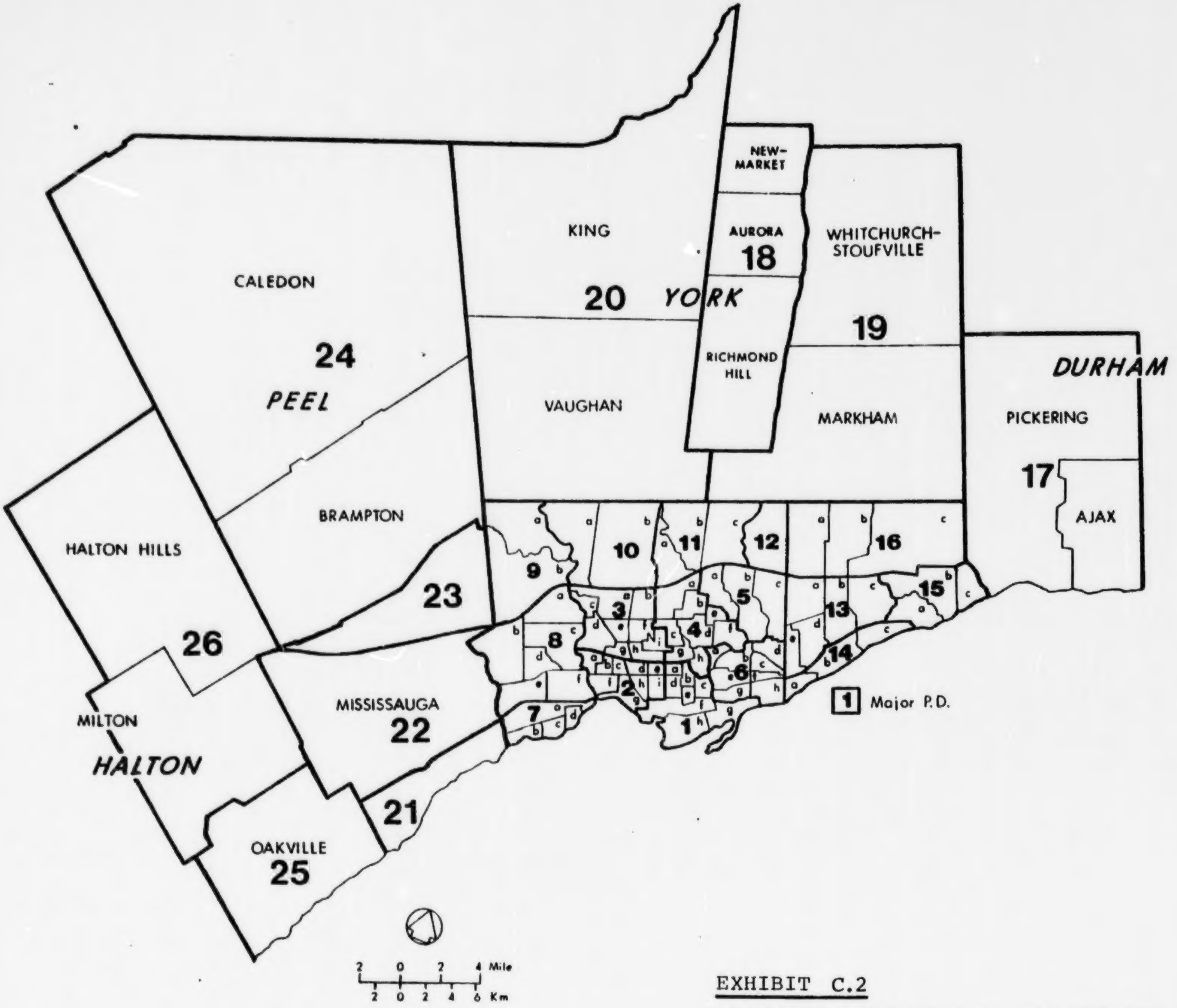
CALEDON
24
PEEL
BRAMPTON
HALTON HILLS
26
MILTON
HALTON
OAKVILLE
25
MISSISSAUGA
22
21
23
KING
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YORK
VAUGHAN
NEW-MARKET
AURORA
18
RICHMOND HILL
WHITCHURCH-STOUFVILLE
19
MARKHAM
DURHAM
PICKERING
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16
1 Major P.D.
2 0 2 4 Mile
2 0 2 4 6 Km

EXHIBIT C.2

PLANNING DISTRICTS IN THE GREATER TORONTO AREA

PREPARED AND DRAWN BY METROPOLITAN TORONTO PLANNING DEPARTMENT

EXHIBIT C.3 COMPARISON OF 2011 A.M. PEAK HOUR TRIPS FOR SYSTEM 3 (GO-ALRT 'A' vs. M1-85)

TOTAL PERSON TRIPS - GO-ALRT 'A'

TO-> FROM	P.D.1	R.Metro	Aj/Pick	York	Peel	E.Halt	TOTAL
P.D. 1	32,549	9,515	57	551	643	39	43,354
Rest of Metro	135,246	303,107	4,659	35,994	31,883	1,255	512,144
Ajax/Pickering	2,932	10,521	6,998	1,929	491	26	22,897
York Region	12,213	52,311	1,202	47,809	9,361	210	123,106
Peel Region	23,539	52,363	244	8,399	193,551	9,479	287,575
East Halton	7,146	9,624	63	1,112	24,292	18,694	60,931
TOTAL	213,625	437,441	13,223	95,794	260,221	29,703	1,050,007

TOTAL PERSON TRIPS - M1-85

TO-> FROM	P.D.1	R.Metro	Aj/Pick	York	Peel	E.Halt	TOTAL
P.D. 1	41,722	11,676	54	604	770	68	54,894
Rest of Metro	127,975	280,158	3,662	31,994	29,243	1,605	474,637
Ajax/Pickering	3,571	12,637	6,773	2,742	605	43	26,371
York Region	11,861	45,161	681	39,575	7,700	282	105,260
Peel Region	23,679	49,123	185	7,763	171,215	11,157	263,122
East Halton	4,727	6,222	33	719	15,793	13,045	40,539
TOTAL	213,535	404,977	11,388	83,397	225,326	26,200	964,823

% DIFFERENCE: M1-85 MINUS GO-ALRT 'A'

TO-> FROM	P.D.1	R.Metro	Aj/Pick	York	Peel	E.Halt	TOTAL
P.D. 1	28.2%	22.7%	-5.3%	9.6%	19.8%	74.4%	26.6%
Rest of Metro	-5.4%	-7.6%	-21.4%	-11.1%	-8.3%	27.9%	-7.3%
Ajax/Pickering	21.8%	20.1%	-3.2%	42.1%	23.2%	65.4%	15.2%
York Region	-2.9%	-13.7%	-43.3%	-17.2%	-17.7%	34.3%	-14.5%
Peel Region	0.6%	-6.2%	-24.2%	-7.6%	-11.5%	17.7%	-8.5%
East Halton	-33.9%	-35.3%	-47.6%	-35.3%	-35.0%	-30.2%	-33.5%
TOTAL	.0%	-7.4%	-13.9%	-12.9%	-13.4%	-11.8%	-8.1%

Exhibit C.4

Comparison of GO-ALRT 'A' and M1-85 Travel Demand Forecasts to the Central Area

	A.M. Peak Hour Total Person Trips 2011			A.M. Peak Hour Total Transit Trips 2001		
From	1981 Simulated*	GO-ALRT'A'	M1-85	1981 Simulated*	GO-ALRT'A'	M1-85
Central Area (P.D.1)	26,750	32,550	41,700	19,850	24,400	30,800
Rest of Metro	126,850	135,250	128,000	91,700	97,600	92,000
Peel/Halton	15,050	30,700	28,400	10,200	23,050	21,150
York	4,550	12,200	11,850	3,100	8,850	8,600
Durham	1,550	2,950	3,550	1,150	2,450	2,900
Sub-total outside Metro	21,150	45,850	43,800	14,450	34,350	32,650
Total	174,750	213,650	213,500	126,000	156,350	155,450

* 1981 simulated travel flows using the Metro Model

EXHIBIT C.5 COMPARISON OF 2011 A.M. PEAK HOUR TRIPS FOR SYSTEM 3
(M1-85: MODEL vs. TRANPLAN ESTIMATES)

TOTAL PERSON TRIPS - M1-85 FROM MODEL

FROM TO->	P.D.1	R.Metro	Aj/Pick	York	Peel	E.Halt	TOTAL
P.D. 1	41,722	11,676	54	604	770	68	54,894
Rest of Metro	127,975	280,158	3,662	31,994	29,243	1,605	474,637
Ajax/Pickering	3,571	12,637	6,773	2,742	605	43	26,371
York Region	11,861	45,161	681	39,575	7,700	282	105,260
Peel Region	23,679	49,123	185	7,763	171,215	11,157	263,122
East Halton	4,727	6,222	33	719	15,793	13,045	40,539
TOTAL	213,535	404,977	11,388	83,397	225,326	26,200	964,823

TOTAL PERSON TRIPS - M1-85 FROM TRANPLAN

FROM TO->	P.D.1	R.Metro	Aj/Pick	York	Peel	E.Halt	TOTAL
P.D. 1	41,200	11,227	48	576	694	53	53,798
Rest of Metro	128,115	271,819	3,307	30,624	27,196	1,435	462,496
Ajax/Pickering	3,844	12,481	6,141	2,125	524	38	25,153
York Region	11,744	43,587	714	37,188	7,299	256	100,788
Peel Region	24,160	48,105	172	7,569	167,708	10,573	258,287
East Halton	5,027	6,307	31	724	15,848	13,223	41,160
TOTAL	214,090	393,526	10,413	78,806	219,269	25,578	941,682

TOTAL TRANSIT TRIPS - M1-85 FROM MODEL
(Includes GO Rail and Park'n'Ride)

FROM TO->	P.D.1	R.Metro	Aj/Pick	York	Peel	E.Halt	TOTAL
P.D. 1	30,813	7,027	24	254	284	17	38,419
Rest of Metro	92,023	114,616	735	7,549	6,516	253	221,692
Ajax/Pickering	2,908	2,525	1,742	231	44	4	7,454
York Region	8,614	11,631	70	11,420	540	17	32,292
Peel Region	17,546	11,393	15	696	52,687	1,524	83,861
East Halton	3,582	962	2	30	1,715	3,424	9,715
TOTAL	155,486	148,154	2,588	20,180	61,786	5,239	393,433

TOTAL TRANSIT TRIPS - M1-85 FROM TRANPLAN
(Includes GO Rail and Park'n'Ride)

FROM TO->	P.D.1	R.Metro	Aj/Pick	York	Peel	E.Halt	TOTAL
P.D. 1	30,885	6,873	22	253	271	17	38,321
Rest of Metro	92,525	111,792	637	7,189	6,097	235	218,475
Ajax/Pickering	3,187	2,758	1,616	223	47	7	7,838
York Region	8,520	11,276	62	10,623	502	18	31,001
Peel Region	17,954	11,021	16	694	51,852	1,518	83,055
East Halton	3,823	949	1	27	1,666	3,658	10,124
TOTAL	156,894	144,669	2,354	19,009	60,435	5,453	388,814

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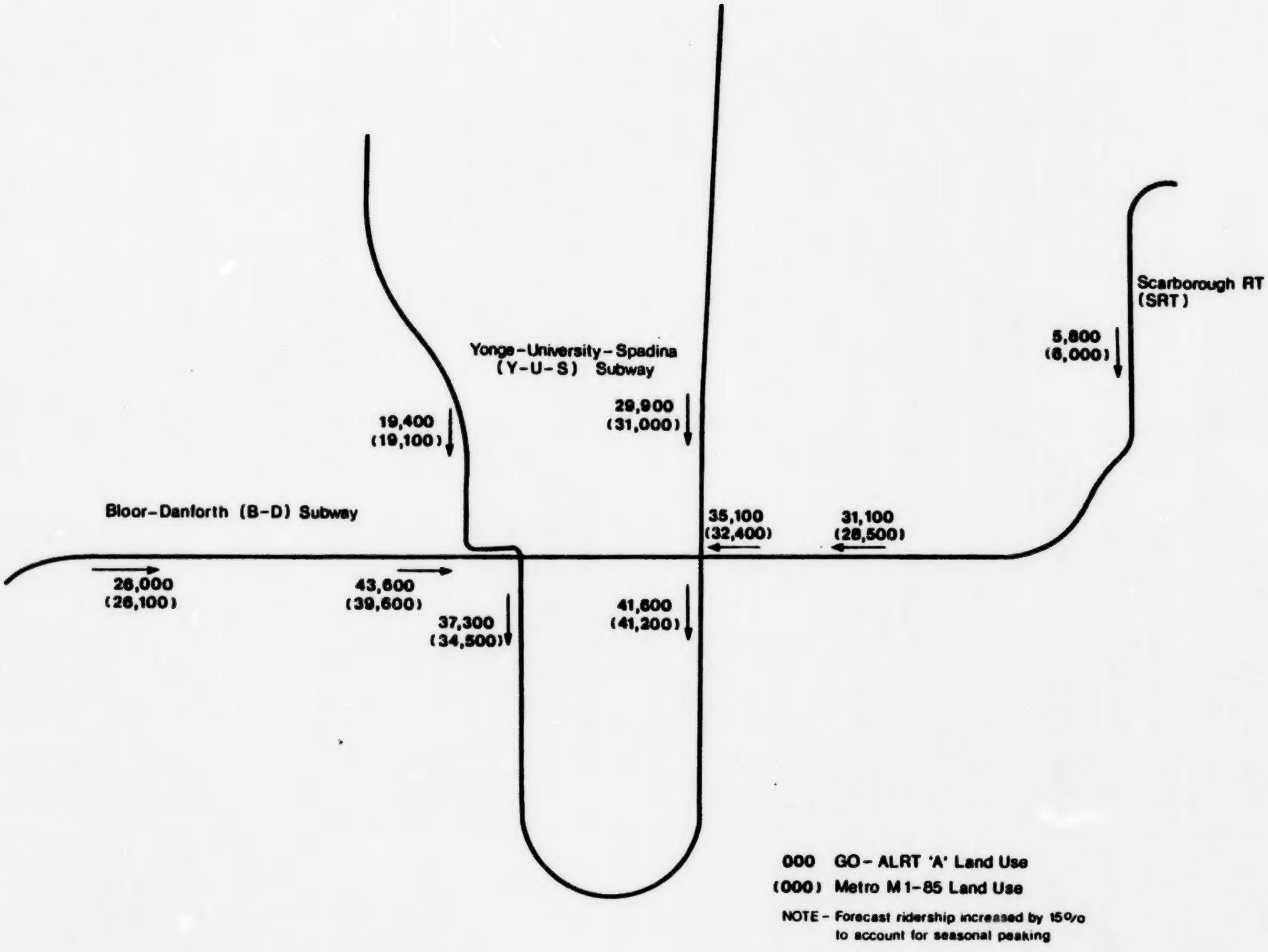
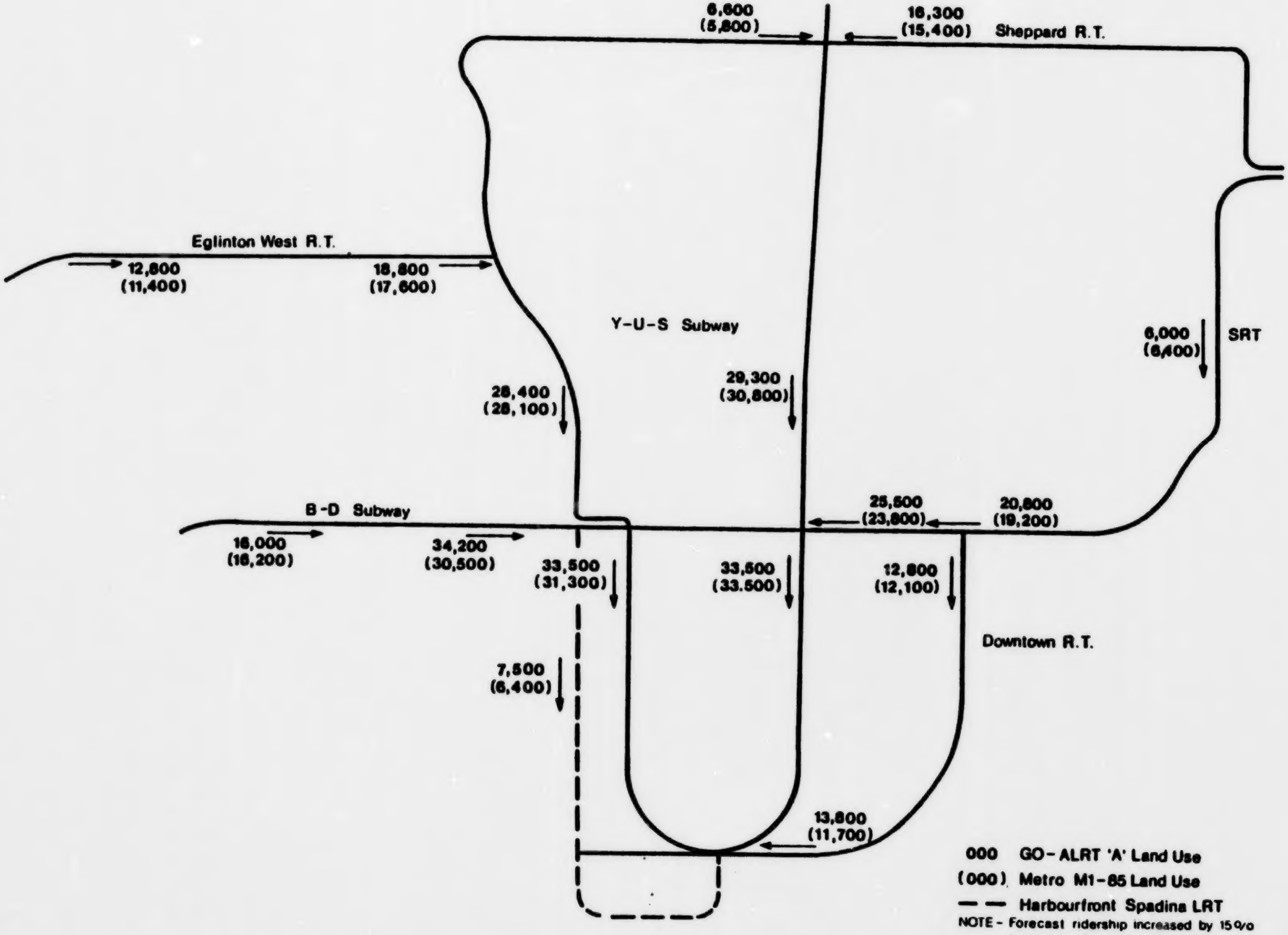

Yonge-University-Spadina
(Y-U-S) Subway
Scarborough RT
(SRT)
5,800
(6,000)
19,400
(19,100)
29,900
(31,000)
Bloor-Danforth (B-D) Subway
35,100
(32,400)
31,100
(28,500)
26,000
(26,100)
43,600
(39,600)
37,300
(34,500)
41,600
(41,200)
000 GO-ALRT 'A' Land Use
(000) Metro M1-85 Land Use

NOTE - Forecast ridership increased by 15% to account for seasonal peaking

EXHIBIT C·6
FORECAST A.M. PEAK HOUR 2011 RIDERSHIP FOR EXISTING (SYSTEM B) NETWORK


6,600
(5,800)
16,300
(15,400)
Sheppard R.T.
Eglinton West R.T.
12,800
(11,400)
18,800
(17,600)
Y-U-S Subway
6,000
(6,400)
SRT
26,400
(26,100)
29,300
(30,800)
B-D Subway
25,500
(23,800)
20,800
(19,200)
16,000
(16,200)
34,200
(30,500)
33,500
(31,300)
33,500
(33.500)
12,800
(12,100)
Downtown R.T.
7,500
(6,400)
13,800
(11,700)
000 GO-ALRT 'A' Land Use
(000) Metro M1-85 Land Use
— — Harbourfront Spadina LRT

NOTE - Forecast ridership increased by 15% to account for seasonal peaking

EXHIBIT C·7
FORECAST A.M. PEAK HOUR 2011 RIDERSHIP FOR EXPANDED (SYSTEM 3) NETWORK

Exhibit C.8

Comparison of GO-ALRT 'A' and M1-85
Rapid Transit Ridership Forecasts
2011 A.M. Peak Hour
Peak Point Loads[1.]

	GO-ALRT 'A'		M1-85	
Rapid Transit Line	**Base Case**	**System 3**	**Base Case**	**System 3**
Yonge	41,600	33,500	41,200	33,500
University	37,300	33,500	34,500	31,300
Bloor	43,600	34,200	39,600	30,500
Danforth	35,100	25,500	32,400	23,800
S.R.T.	5,800	6,000	6,000	6,400
Sheppard	--	16,300	--	15,400
Eglinton	--	18,800	--	17,600
D.R.T.	--	12,800	--	12,100

Notes:

1. 2011 A.M. peak hour model results factored up by 15% to represent seasonal demand variations.

EXHIBIT C.9

2011 SYSTEM TESTS - SCREENLINE COMPARISONS
(M1-85 vs. GO-ALRT 'A')

METRO BOUNDARY CORDON

(A.M. Peak hour, Inbound)

Screenline Segment	System 3 M1-85	System 3 GO-ALRT A	DIFFERENCE	System B M1-85	System B GO-ALRT A	DIFFERENCE
WEST						
Auto Persons	61,800	70,000	-8,200	61,900	70,500	-8,600
% Auto	63%	64%		65%	66%	
Transit Passengers	18,100	19,600	-1,500	15,400	16,200	-800
% Transit	18%	18%		16%	15%	
GO Rail Passengers	18,300	20,200	-1,900	18,400	20,500	-2,100
% GO Rail	19%	18%		19%	19%	
Total Persons	98,200	109,800	-11,600	95,700	107,200	-11,500
NORTH						
Auto Persons	55,600	61,100	-5,500	55,900	61,400	-5,500
% Auto	74%	74%		74%	74%	
Transit Passengers	18,300	20,300	-2,000	18,500	20,500	-2,000
% Transit	24%	25%		24%	25%	
GO Rail Passengers	1,300	1,400	-100	1,300	1,400	-100
% GO Rail	2%	2%		2%	2%	
Total Persons	75,200	82,800	-7,600	75,700	83,300	-7,600
EAST						
Auto Persons	16,300	15,100	+1,200	17,100	15,700	+1,400
% Auto	68%	69%		72%	73%	
Transit Passengers	3,200	2,900	+300	2,100	1,900	+200
% Transit	13%	13%		9%	9%	
GO Rail Passengers	4,500	4,000	+500	4,400	4,000	+400
% GO Rail	19%	18%		19%	19%	
Total Persons	24,000	22,000	+2,000	23,600	21,600	+2,000
TOTAL						
Auto Persons	133,700	146,200	-12,500	134,900	147,600	-12,700
% Auto	68%	68%		69%	70%	
Transit Passengers	39,600	42,800	-3,200	36,000	38,600	-2,600
% Transit	20%	20%		18%	18%	
GO Rail Passengers	24,100	25,600	-1,500	24,100	25,900	-1,800
% GO Rail	12%	12%		12%	12%	
Total Persons	197,400	214,600	-17,200	195,000	212,100	-17,100

Note: External GO Rail and Auto trips included.

EXHIBIT C.9 (Cont.) 2011 SYSTEM TESTS - SCREENLINE COMPARISONS
(M1-85 vs. GO-ALRT 'A')

SUBURBAN CORDON

(A.M. Peak hour, Inbound)

Screenline Segment	System 3 M1-85	System 3 GO-ALRT A	DIFFERENCE	System B M1-85	System B GO-ALRT A	DIFFERENCE
WEST						
Auto Persons	24,600	25,200	-600	25,200	26,000	-800
% Auto	35%	35%		38%	38%	
Transit Passengers	25,900	26,000	-100	22,100	21,800	+300
% Transit	37%	36%		33%	32%	
GO Rail Passengers	19,100	21,000	-1,900	19,200	21,300	-2,100
% GO Rail	27%	29%		29%	31%	
Total Persons	69,600	72,200	-2,600	66,500	69,100	-2,600
NORTH						
Auto Persons	51,600	54,000	-2,400	51,900	54,300	-2,400
% Auto	57%	59%		58%	60%	
Transit Passengers	36,100	36,000	+100	35,200	34,800	+400
% Transit	40%	39%		39%	38%	
GO Rail Passengers	2,100	2,200	-100	2,100	2,100	0
% GO Rail	2%	2%		2%	2%	
Total Persons	89,800	92,200	-2,400	89,200	91,200	-2,000
EAST						
Auto Persons	14,300	14,800	-500	14,500	14,900	-400
% Auto	43%	44%		42%	42%	
Transit Passengers	13,800	13,900	-100	14,900	15,200	-300
% Transit	41%	41%		43%	43%	
GO Rail Passengers	5,300	4,900	+400	5,300	5,000	+300
% GO Rail	16%	15%		15%	14%	
Total Persons	33,400	33,600	-200	34,700	35,100	-400
TOTAL						
Auto Persons	90,500	94,000	-3,500	91,600	95,200	-3,600
% Auto	47%	47%		48%	49%	
Transit Passengers	75,800	75,900	-100	72,200	71,800	+400
% Transit	39%	38%		38%	37%	
GO Rail Passengers	26,500	28,100	-1,600	26,600	28,400	-1,800
% GO Rail	14%	14%		14%	15%	
Total Persons	192,800	198,000	-5,200	190,400	195,400	-5,000

Note: External GO Rail and Auto trips included.

EXHIBIT C.9 (Cont.) 2011 SYSTEM TESTS - SCREENLINE COMPARISONS
(M1-85 vs. GO-ALRT 'A')

CENTRAL AREA CORDON

(A.M. Peak hour, Inbound)

Screenline Segment	System 3 M1-85	System 3 GO-ALRT A	DIFFERENCE	System B M1-85	System B GO-ALRT A	DIFFERENCE
WEST						
Auto Persons	21,700	23,600	-1,900	22,000	23,700	-1,700
% Auto	29%	28%		26%	25%	
Transit Passengers	34,700	38,800	-4,100	43,900	48,400	-4,500
% Transit	46%	46%		51%	52%	
GO Rail Passengers	19,500	21,400	-1,900	19,700	21,800	-2,100
% GO Rail	26%	26%		23%	23%	
Total Persons	75,900	83,800	-7,900	85,600	93,900	-8,300
NORTH						
Auto Persons	12,400	12,300	+100	12,400	12,300	+100
% Auto	19%	20%		22%	22%	
Transit Passengers	51,200	50,100	+1,100	44,000	42,900	+1,100
% Transit	81%	80%		78%	78%	
GO Rail Passengers	0	0	0	0	0	0
% GO Rail	0%	0%		0%	0%	
Total Persons	63,600	62,400	+1,200	56,400	55,200	+1,200
EAST						
Auto Persons	17,900	19,500	-1,600	18,100	19,600	-1,500
% Auto	32%	32%		32%	32%	
Transit Passengers	31,100	34,800	-3,700	30,700	34,400	-3,700
% Transit	55%	56%		54%	56%	
GO Rail Passengers	7,700	7,400	+300	7,600	7,300	+300
% GO Rail	14%	12%		13%	12%	
Total Persons	56,700	61,700	-5,000	56,400	61,300	-4,900
TOTAL						
Auto Persons	52,000	55,400	-3,400	52,500	55,600	-3,100
% Auto	27%	27%		26%	26%	
Transit Passengers	117,000	123,700	-6,700	118,600	125,700	-7,100
% Transit	60%	59%		60%	60%	
GO Rail Passengers	27,200	28,800	-1,600	27,300	29,100	-1,800
% GO Rail	14%	14%		14%	14%	
Total Persons	196,200	207,900	-11,700	198,400	210,400	-12,000

Note: External GO Rail and Auto trips included.

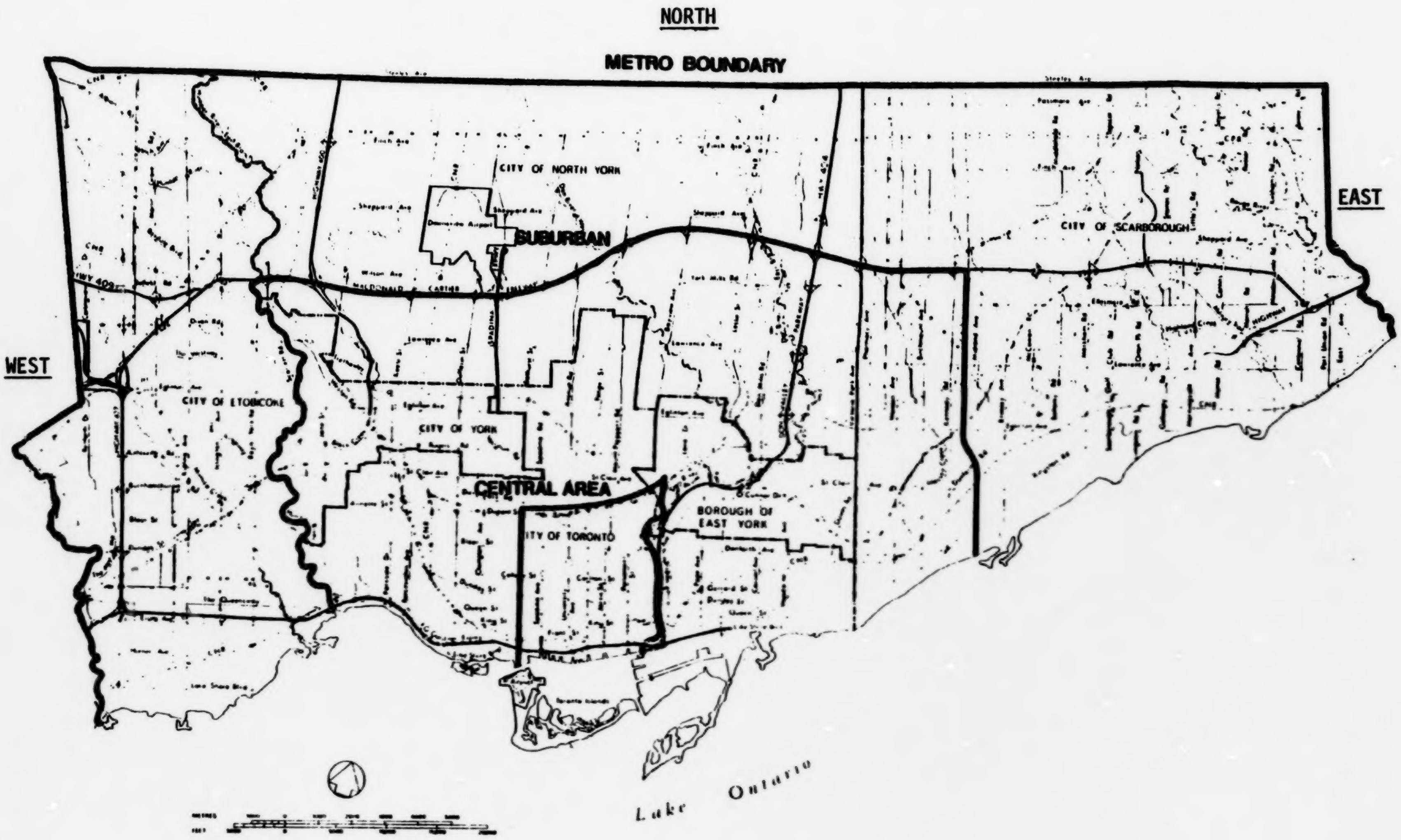

NORTH
METRO BOUNDARY
EAST
WEST
CITY OF NORTH YORK
SUBURBAN
CITY OF SCARBOROUGH
CITY OF ETOBICOKE
CITY OF YORK
CENTRAL AREA
CITY OF TORONTO
BOROUGH OF EAST YORK
HWY 409
MACDONALD CARTIER FREEWAY
Lake Ontario

EXHIBIT C.10 CORDONS AND SCREENLINES

Exhibit C.11

Impact of Upgraded GO Services Across The West Metro Boundary on 2011 A.M. Peak Hour Ridership Forecasts

	2011 Ridership Forecast[1]	Maximum Diversion Potential[2]	Probable Diversion Potential[4]	Net Ridership
2011 Base Case Bloor Line Peak Point Load	39,600	8,600	4,300-6,500	33,100-35,300
2011 System 3 Eglinton Line Ridership at the West Metro Boundary	11,400	5,900[3]	3,000-4,400[3]	7,000-8,400
2011 System 3 Eglinton Line Peak point load	17,600	5,900[3]	3,000-4,400[3]	13,200-14,600

1. Based on M1-85 land use forecast: includes peaking factor of 15% to reflect seasonal variations
2. Based on travel times only
3. Includes maximum diversion potential of 700 to local transit services, probable diversion of 350 - 525 to local transit
4. 50 to 75 per cent. of maximum diversion potential

Exhibit C.12

Diversion Potential from Existing T.T.C. Services in the Sheppard/Finch Corridor

A.M. Peak Hour

T.T.C. Route	A.M. Peak Hour Peak Point Load (1986 Counts)	Maximum Diversion Potential	Probable Diversion Potential
Sheppard East	2,891	810	405-610
Finch East	3,334	1,125	565-845
Cummer	665	180	90-135
Steeles East	886	180	90-135
Total	7,776	2,295	1,150-1,725 (1,200-1,700)

Exhibit C.13

Impact of Upgraded North-South GO Services on 2011 A.M. Peak Hour Ridership Forecasts

	2011 Ridership[1] Forecast	Maximum Diversion Potential	Probable Diversion Potential	Net Ridership
2011 Base Case Yonge Line Peak Point Load	41,200	7,500	3,800-5,600	33,600-37,400
2011 System 3 Sheppard Line Peak Point Load	15,400	3,100	1,600-2,300	13,100-13,800

1. Based on M1-85 land use forecast: includes peaking factor of 15% to reflect seasonal variations

2. Based on travel times only

3. 50 to 75 per cent. of maximum diversion potential

APPENDIX D

EXECUTIVE SUMMARY OF THE WEST METRO BOUNDARY TRANSPORTATION REVIEW

Page

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Approach D-1

Past Growth D-2

Future Travel Demand D-3

Current Capacity Situation D-4

Future Capacity Situation D-4

Review of Potential Improvements D-7

Conclusions and Recommended Strategy D-12

EXECUTIVE SUMMARY
WEST METRO BOUNDARY TRANSPORTATION REVIEW

STUDY PURPOSE

The intention of this study has been to gain a better understanding of the extent and nature of the West Metro 'boundary problem', the magnitude of cross boundary travel demand growth and the nature and level of transportation improvements that will have to be considered.

Various alternatives that could increase transportation capacity across the boundary were explored and assessed in terms of their ability to cater to current and future travel patterns, with the intent of identifying improvements and additions to the transportation system which would best serve the increasing number of Metro-bound commuters.

The travel demand forecasts have been reviewed and the resultant performance of the various transportation initiatives considered in terms of their ability to accommodate future cross-boundary travel. The net result of the study has been the development of a proposed strategy that could deal with the growth in commuting over the coming years in a manner which matches supply and demand elements as closely as possible.

APPROACH

In reviewing transportation issues at the West Metro boundary, a straight forward approach has been adopted which identifies clearly the nature of the boundary problem so that solutions can be effectively directed. This was achieved by adopting the following procedure:

1. document recent travel growth and assess current deficiencies;
2. document alternative future land-use forecasts, and summarize differences;
3. document alternative travel demand forecasts, identify differences (and hence risk) and note similarities;

4. identify future road deficiencies, define the nature of the problem and hence potential transit markets;
5. review the merits of potential road and transit proposals/initiatives;
6. assess potential improvements in terms of which appear to best address the 'problem' as defined at step 4;
7. recommend a strategy that directly addresses the current and future pressures, while recognizing the risk involved in making recommendations for large capital investments.

The most important steps in this procedure are steps 3 and 4. In the past, much has been said about the intensification of the West Metro boundary problem. In steps 3 and 4, this study identifies the location of the present problem, where it will intensify most and, most importantly, the origin-destination patterns of future cross-boundary trips. This review has concentrated on identifying solutions that have the best chance of succeeding in accommodating the increase in commuting into Metro from the west.

PAST GROWTH

Between 1971 and 1981 the population of the Region of Peel nearly doubled from 260,000 to 491,000.

The Census of Canada journey-to-work data shows that between the census years of 1971 and 1981 the number of people travelling from Peel, Halton and Hamilton into Metropolitan Toronto for the purpose of work on a typical weekday had grown from 44,700 to 123,400 (a growth of 276%). However, cross-boundary travel in the morning peak period increased by only 4% between 1981 and 1985, indicating a considerable slowing of growth since the seventies. This recent slow growth is probably a direct result of the economic recession during 1982 and 1983.

The role of transit in serving trips across the west boundary has been slowly but steadily increasing. Commuter rail now carries 19% (compared to 11% in 1975) of the morning peak hour cross-boundary travel and bus services carry another 9%, with the remaining 72% of people using the automobile.

FUTURE TRAVEL DEMAND

Forecasting future travel depends largely on the forecasts of future population and employment and their distribution. Demographic forecasts prepared by various agencies for the Greater Toronto Area differ considerably. The main areas of difference are the forecasts of population, and particularly employment, for the Toronto Central Area (Planning District 1) and for the Region of Peel as a whole. As these forecasts are partly a reflection of municipal development goals, it is unlikely a concensus between the different municipal forecasters will be reached. This study has not attempted a rationalization of these forecasts but instead has focused on identifying the implications for West Metro boundary travel , indicating differences in travel forecasts and associated risk, and also identifying the similarities between forecasts. The forecasts for 2011 morning peak hour travel across the west boundary into Metro range between 80,000 and 110,000. A range this large has significant implications for the scale and timing of required improvements and whether a facility is required in the planning time frame at all. However, when comparing the distribution of travel across the boundary, the forecasts are remarkably similar, which gives more confidence in identifying trouble spots and the nature of the problem. For example the distribution of Metro work places for Mississauga residents is shown as follows:

	Toronto Central Area	**Etobicoke**	**North York (N.of 401)**	**Scarborough**	**Rest of Metro**
1981 (Actual)	32%	38%	8%	2%	20%
2011 (range of forecasts)	30-33%	35-38%	10-11%	2-3%	19-20%

The above tabulation shows that approximately 70% of commuters from Mississauga are presently destined to two main areas, namely Etobicoke (Peel residents occupy 25% of all jobs in Etobicoke) and the Toronto Central Area. Attention is directed towards Exhibits 3.7 and 3.8 of the main report for illustration of this data. The forecasts show little change in trip distribution between now and 2011 and, therefore, identified solutions will be relevant for both existing and future conditions.

CURRENT CAPACITY SITUATION

In general, roads at the boundary are operating increasingly nearer to capacity. Roads towards the southern end of the boundary, between Dundas and the Lakeshore, are the most congested and are considered to be operating at capacity in the morning peak. Transit services, particularly the three GO Rail services, (Lakeshore, Milton and Georgetown), have been successful in capturing a greater share of inter-regional travel at the boundary over the last 10 years. The Lakeshore line is currently operating near its peak period capacity, and existing residual peak period capacity on the Milton and Georgetown lines may be of limited value, since the peak-period-only service on these lines limits market potential. Regarding municipal transit services, Mississauga Transit currently operates approximately 68 buses in the peak hour (equivalent to a peak hour capacity of 4,000 passengers) across the boundary, with approximately 60 of these serving Islington Station directly. New and increased services could provide substantial additional capacity, as demand warrants. The Bloor subway is currently operating at about 75% of peak hour capacity at the peak point (west of St. George Station).

FUTURE CAPACITY DEFICIENCIES

In summary, concerning future roadway deficiencies and the nature of the problem, analysis carried out for this study led to the following conclusions:

1. Future travel demand will increase greatly on the roads crossing the boundary, and between Highway 401 and the Lakeshore in particular;

2. The roads between Dundas Street and the Lakeshore will not be able to accommodate even the low growth 2011 forecast for travel demand;

3. Roads between Bloor Street and Highway 401 would be able to accommodate the low growth forecast for travel demand, but not the high growth forecast;

4. Roads north of Highway 401 to Steeles Avenue are likely to be able to cope with the largest expected increase in travel demand with modest road and transit improvements;

5. Given that the roadways across the boundary south of Highway 401 will generally not be able to cope with the forecast travel demand, transit solutions will have to be initiated in lieu of increased road capacity, if the forecast demand is to be served;

6. Several cross-boundary arterials (e.g. Queensway, Eglinton) are not currently used to provide bus services into Metro. Current routes have the potential for more frequent service. There is, therefore, a significant potential bus capacity that is yet to be realized.

7. In order for new transit initiatives to be successful, they must be effectively directed at the major destination areas within Metro Toronto;

8. The main element of existing auto travel across the boundary is for commuters with destinations in Etobicoke, (40% to 50% of the total auto travel) and particularly the Rexdale and south Etobicoke employment areas. In other words, the largest portion of auto travel is relatively short distance trips;

9. Because of the north-south 'scatter' of destination areas for auto travel into Metro, a single new high capacity transit service, while providing a useful trunk facility which improves the transit grid, is unlikely to attract a major proportion of auto trips to transit. Instead, numerous bus services along the main arterials and possibly freeways, would provide a more direct penetration of the main destination areas. A similar argument can be made due to the 'scatter' at the origin end, as Mississauga is generally a low density suburban community;

10. The existing primary orientation of Mississauga Transit services to Kipling/Islington is expected to continue in the future, both to serve employment growth in the Kipling/Islington Centre and to provide access to the Bloor subway. These services, assuming future service and fare integration with the T.T.C., could effect a modal shift to transit for some destinations in Etobicoke and other employment areas.

11. The three GO Rail services will have an increasingly important role to play in serving the downtown destined commuter. Incremental service improvements to GO Rail will be needed as demand increases and could also serve some of the commuting into Etobicoke;

12. Other potential transit markets should be identified (e.g. Downsview, North York Civic Centre) and the potential to implement direct services investigated further;

13. Longer distance commuters (e.g. to Scarborough) tend to be more auto dependant. Destination areas, other than those mentioned, tend to be more dispersed and much more difficult to serve by transit.

REVIEW OF POTENTIAL IMPROVEMENTS

Roads

Road improvements that are felt to be most feasible in future years include:

Road Widenings

Queen Elizabeth Way (operational improvements) west of Etobicoke Creek;
The Queensway - west of Etobicoke Creek;
Dundas Street - west of Etobicoke Creek;
Eglinton Avenue - west of Highway 427;
Airport Road - west of American Drive;
Finch Avenue - both sides of boundary; and
Steeles Avenue - both sides of boundary.

New Link

Highway 407 (from Highway 10 to Highway 404)

The above list shows limited possibilities to relieve pressure on the most congested roadways towards the Lakeshore. The best opportunities for road improvement are toward the north of the boundary where there appears to be less pressure on the road system. South of Highway 401, potential new links such as the extensions of Rathburn Road, Sherway Drive and North Queen Street should be pursued by conducting feasibility studies. Construction of Highway 407 is seen as primarily benefiting Brampton and the Region of York, but preliminary analysis shows it would have a positive benefit for the West Metro boundary, between Highway 401 and Steeles Avenue, diverting traffic away from the boundary. Although not relieving the most congested sections of the boundary, any relief, for example to Highway 401, would allow some diversion from roads in the more congested south.

Transit

The following transit options which could encourage further shifts to transit usage for commuters into Metro from the west were examined:

1. GO Transit - Rail and Bus;
2. Municipal Transit - new and improved services;
3. Fare and Service Integration;
4. Eglinton West Rapid Transit (E.W.R.T.) line with extension to Mississauga City Centre;
5. Bloor Subway Extension; and
6. GO-ALRT Northern Section.

The current travel demand models in use by Metro Toronto and Regional Municipalities in the Greater Toronto Area are two mode models, the two modes being private automobile and municipal transit. A third mode, GO Transit, is not modelled explicitly, due to a lack of sufficient travel behaviour data. This means that there is a tendency to underestimate GO Transit ridership, particularly for inter-regional travel. As the current review of the West Metro boundary was essentially a review of inter-regional travel (GO Transit's natural role), further analysis of forecasts for municipal and GO Transit ridership was essential. The assignment of auto trips by the travel demand model is not constrained by road capacity, meaning it can forecast auto travel above what can be accommodated by the road system. This is not a concern, as the unconstrained assignment gives an excellent indication of where auto deficiencies are greatest and, therefore, where transit initiatives are required.

GO Transit

The Lakeshore West GO Rail line has an all-day, 7 day a week service. The other lines provide weekday rush hour services only, with 3 trains on the Milton line (2 to be added in 1988) and 4 on the Georgetown line. The result of analyses carried out in this study shows that future expansion of service on all three lines, particularly the Milton line, would be extremely beneficial in reducing auto demand across the boundary. A preliminary examination of demand indicates the Milton line has a great potential for generating ridership which would eventually justify full service on the line, similar to that of the Lakeshore line. Incremental improvements in service on this line in particular, and the other two GO rail lines could reduce the foreseen need for any other downtown-destined rapid transit facilities from the west since a substantial amount of the ridership forecast for the Bloor subway would more likely use the improved commuter rail services.

There are currently three GO Bus services operating through Mississauga into Metro: Lakeshore into Toronto and, Milton/Meadowvale and Brampton/Malton, both into Yorkdale and York Mills. Incremental expansion of these services, with consideration of new GO Bus services targetted towards identifiable markets, will ease auto travel across the boundary.

Municipal Transit

Presently, the majority of Mississauga Transit bus services entering Metro feed the subway at Islington station. Operational testing of the proposed Mississauga busway, by means of express bus service between Mississauga City Centre and Kipling station via Highway 403/Eglinton Avenue and Highway 427 should be introduced on an interim basis, allowing assessment of the need for grade-separated rapid transit facilities (e.g. in the Eglinton corridor) in light of future GO Rail performance. The main element of auto travel across the boundary is for commuters with destinations in the major industrial areas of Rexdale and south Etobicoke which are either inadequately served, or not served at all by transit from the west. Direct service into these areas from Mississauga (and to a lesser extent from Brampton) combined with fare and service integration with T.T.C. services would greatly improve accessibility and hence the attractiveness of transit.

Fare and Service Integration

For many commuters from the west, journeying by transit into Metro may require several changes of service and also payment of as many as three separate fares. This is obviously not a situation that promotes the use of transit for commuting purposes. It is clear that a more equitable fare structure together with a co-ordination of Municipal and Provincial transit services would encourage commuters to choose transit in favour of the auto.

Applications that could have a direct influence on commuting across the West Metro boundary are:

1. Fare Integration between GO Transit and T.T.C. at Union Station.

   A fare concession to access the subway for GO passengers could fill up empty seats on the subway in the off-peak direction, both morning and evening. Depending on the fare compensation arrangement agreed to, additional T.T.C. revenues may be generated without any additional service requirements or operating costs. This arrangement would have the appeal of attracting to GO Rail passengers that do not have a downtown core destination, but do have a destination within easy reach of the subway system.

2. Fare and Service Integration in Etobicoke between GO Transit, Mississauga and Brampton Transit and the T.T.C.

   Although not without problems in its execution, this initiative could have the greatest impact in encouraging a greater shift to transit usage in inter-regional travel. It could mean a requirement for more frequent bus and streetcar services in Etobicoke which would obviously benefit residents of Metro, and Etobicoke in particular. The overall cost and benefit implications to the T.T.C. are not clear, and obviously have to be taken into account in negotiations with the M.T.C.

Eglinton West Rapid Transit

The E.W.R.T. proposal, assuming an extension or connection to the proposed Mississauga busway, has been reviewed in this study only in terms of its ability to accommodate cross-boundary travel and to relieve pressure on the road system at the boundary. It is recognized that this line has other merits (viz. in serving transit trips within Metro and in satisfying planning objectives), and these should also be addressed in the context of the Network 2011 strategy.

The analysis conducted for this study indicates that a single new rapid transit facility will not provide the most effective means of serving non-central destinations or effecting a significant modal shift to transit. The study has concluded that expanded GO Rail services to serve the Central Area, new and improved municipal transit services directed at specific transit markets, and transit service and fare integration among GO Transit, Mississauga Transit, and the T.T.C. to make optimum use of the existing grid transit system, as a package of improvements, could most effectively serve future cross-boundary travel needs. Assuming GO Transit will increase train frequency as demand arises, the Bloor subway likely would not reach capacity before 2001 and may not reach capacity before 2011.

Nevertheless, if commuter rail and surface transit improvements, including fare and service integration, are not implemented or are not successful in effecting a significant modal shift to transit, implementation of municipal rapid transit solutions such as the E.W.R.T. line would be required. In the meantime, the Mississauga busway facility could be implemented and connected to the Bloor subway which should have adequate capacity to accommodate the resultant additional ridership for some time to come. The timing of implementation of the E.W.R.T. should be reviewed both within the context of West Metro boundary travel monitoring and through the comprehensive five-year reviews recommended in the Network 2011 strategy.

Bloor Subway Extension

The advantages and disadvantages of extending the subway into the Sherway Gardens area or further west are presented in Section 5.6 of the main body of this report. Extension to Sherway Gardens does not appear to have very much appeal in that it does not provide a 'new' service or increase capacity across the boundary and therefore is unlikely to ease auto travel across the boundary. This option should not be considered further. The alternative option of extending the Bloor subway into Mississauga, despite a higher capital cost, would provide additional cross-boundary capacity and alleviate road congestion in Etobicoke. The feasibility of this option is dependent largely on the extent to which improved GO Rail services divert longer distance trips from the Bloor line and should possibly be considered further as part of a future on-going review process for West Metro boundary travel.

GO-ALRT Northern Section

The preferred alignment for the long-range GO-ALRT Northern Section linked the Mississauga City Centre and Durham via the Highway 403 corridor, Highway 427 (or Highway 27), the Finch Hydro Corridor, Brimley Road or McCowan Road to the Scarborough City Centre and Highway 401 easterly. While a short-term need for this facility cannot be demonstrated, the long-term concept would provide useful connections between Mississauga and major employment concentrations in Metro Toronto and could provide a logical link between the proposed Mississauga busway and the proposed Sheppard rapid transit line. Accordingly, the concept should be included in future reviews of West Metro boundary travel.

CONCLUSIONS AND RECOMMENDED STRATEGY

Risk

The greatest risk involved in identifying long term solutions to facilitate future cross-boundary travel is in predicting the rate of growth and magnitude of travel demand and hence the scale and timing of required improvements. Numerous forecasts for the year 2011, which differ by as much as 40%, have been made by different forecasters, and the implied timing and extent of required transportation investments vary accordingly.

In an uncertain environment, a commitment to major infrastructure in the near term to address a problem that may not arise entails considerable risk. It is felt, therefore, that a strategy aimed at responding to, rather than leading travel demand is appropriate. Having identified the nature of the demand across the boundary and the initiatives which best address the travel desires, a responsive approach would entail incremental application of improvements to roadways and transit services. This approach allows a process of monitoring, testing and review to be carried out without commitments to large amounts of capital investment until the need for implementation becomes more apparent. The recommended strategy to address commuting pressure across the West Metro boundary is described as follows:

Recommended Strategy to Address West Metro Boundary Commuter Travel

1. Implementation of incremental road improvements across the boundary as demand requires, but not in advance of need if transit initiatives are to be successful.

2. Encouragement to Peel and M.T.C. to improve the road system in Peel to divert trips from crossing the boundary (e.g. Highway 401/Airport connection, Highway 407), or to divert trips away from the southern part of the boundary to roads further north (e.g. improve north-south roadways within Mississauga).

3. Introduction of incremental and continuous improvements in western GO Rail services (particularly the Milton line) to serve the increasing

travel demand for downtown destinations, including fare integration at Union Station to make the service more attractive for commuters with convenient access to the subway system beyond Union Station. Major capital investments should be reviewed in the context of alternative rapid transit opportunities.

4. Identification of transit markets for the implementation of additional GO and Municipal bus services (e.g. South Etobicoke, Airport, Rexdale, Downsview, North York, etc.).

5. Introduction of fare and service integration among GO Transit, the T.T.C., Mississauga Transit and Brampton Transit for cross boundary transit travel to arrive at a more equitable transit fare structure, improved grid of transit services and more direct routing, all of which would encourage a shift from auto to transit usage.

6. Protection of corridors for future rapid transit facilities including the E.W.R.T. and the Mississauga City Centre to Kipling Station busway connection, and operational testing of improved bus services to more accurately assess the potential demand and timing of implementation of such initiatives.

7. Initiation of an ongoing review process, including monitoring of population and employment growth, travel demand, (e.g. cordon counts, census surveys), assessment of the success of initiatives, fine tuning/modification, review of forecasts, etc. The results of this ongoing review would be incorporated in the five-year review program proposed for the Network 2011 strategy.

The strategy described above is felt to be a responsible approach to the uncertainty of the future commuting situation. The approach is one that does not require large initial capital investment and, at the same time, contains specific proposals that have an excellent chance of coping with the increase in travel demand for many years to come.

It is important to note that this strategy is dependent on a commitment by the current and future Provincial Governments to improve GO Transit services and to co-ordinate the implementation of the fare and service integration initiatives described above. If this proves not to be the case, or if capital and operating costs become prohibitive, future reviews of West Metro boundary travel may conclude that the implementation of a new rapid transit facility is required.

APPENDIX E

THE SHEPPARD/FINCH CORRIDOR

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THE SHEPPARD/FINCH CORRIDOR

1. INTRODUCTION

The Network 2011 study recommended that implementation of the Sheppard Subway should be the first priority in the expansion of Metro's rapid transit system. The justification for this recommendation was that the Sheppard Subway will benefit existing bus passengers in the Sheppard/Finch corridor in addition to freeing up road capacity and improving transit mobility in north Metro. Furthermore, by improving accessibility, the Sheppard Subway provides the additional transit capacity which will allow development of both the North York and Scarborough City Centres in accordance with the fundamental development objectives of the Metropolitan Official Plan.

The Borough of East York and the Cities of Etobicoke and York in their responses to Network 2011, questioned the immediate need for a Sheppard Subway viz-a-viz the priority of rapid transit lines serving their communities. The Cities of North York and Scarborough raised concerns about the staging of construction of the Sheppard Line but supported a Sheppard Line as first priority. In view of the municipal responses received, the Network 2011 conclusions and recommended phasing have been re-examined.

This appendix presents a re-examination of the Sheppard Line by focussing on the demand, alignment, technology, phasing and long-term strategy rationale. The appendix concludes with the T.T.C. and Metro staff recommendation with respect to phasing options for implementing the Sheppard Subway Line.

2. TRAVEL DEMAND IN THE SHEPPARD/FINCH CORRIDOR

Appendix C addressed the Network 2011 Travel Demand forecasts in response to the comments of the area municipalities regarding revised land use forecasts. The new forecasts, generated using the M1-85 land use forecast, indicate a reduction in the projected 2011 A.M. peak hour ridership forecast for most parts of the rapid transit system, including the Sheppard/Finch corridor. The magnitude of the reductions are not significant enough by themselves to warrant a change in the recommended implementation schedule; however, the new forecasts raise some questions that can more appropriately be answered during the first five year review, when additional, updated information will be available.

Several municipalities mentioned that improvements to the Richmond Hill GO Line could alleviate the need for a Sheppard Line. The analysis of the Network 2011 System 3 ridership forecasts identified that approximately 1,600 to 2,300 of the peak hour Sheppard Subway forecast ridership might be attracted to the Richmond Hill GO service if it could be improved to provide competitive service levels. The impact of the GO improvements could reduce the Sheppard Subway A.M. peak hour peak point load to approximately 13,100 to 13,800. Despite this potential reduction in the Sheppard Subway ridership forecast, it is still believed that a rapid transit line should be built along Sheppard Avenue and that it should remain as the first priority.

3. CHOICE OF ALIGNMENT

The Region of York and the Town of Markham in their responses to Network 2011 indicated a preference for a rapid transit line in the Finch hydro right-of-way. The Cities of North York and Scarborough indicated a preference for the recommended Network 2011 Sheppard Avenue alignment.

(a) Development Objectives

The evaluation of alignments in the Sheppard/Finch Rapid Transit Corridor Study concluded that Sheppard Avenue is a more suitable alignment than Finch Avenue or the Hydro right-of-way. Among the most important considerations in implementing a rapid transit line is the service demand which exists or will exist in close proximity to the alignment. The Sheppard Avenue alignment would serve approximately 50% more existing and future employment than a Finch alignment. Employment growth in the corridor is concentrated at the North Yonge Centre and Scarborough City Centre. In particular, the North Yonge Centre development is to be focussed toward the south end close to Sheppard Avenue. The other areas expected to experience substantial growth are the Consumer's Road Office Park (Sheppard and Don Valley Parkway) and the proposed Kennedy/Sheppard Intermediate Centre. Further employment potential along the Sheppard alignment exists if the Downsview Airport site is developed. Employment forecasts for some of the above noted centres are provided in Exhibit E.1.

(b) Cost

The other major factor which discriminated among the three alignment options was cost. For alignments along Finch Avenue or the hydro right-of-way, the Spadina Subway would have to be extended an additional two kilometres. The costs of a Spadina extension ($1985) are estimated to be greater for the Finch Avenue ($179 million) and hydro right-of-way ($200 million) options than for the Sheppard option ($84 million). Similarly, the north-south segment to the Scarborough City Centre via McCowan Road would be an additional three to four kilometres in length. Thus, selection of either of the two more northerly alignments would mean construction of an additional four to six kilometres of route, adding up to 33% more length compared to the recommended Sheppard option. From a Metropolitan perspective there is no transportation advantage to be realized from the additional cost. Furthermore, greater reductions in feeder bus costs will be realized from the Sheppard alignment since extensive bus service would still be required on Sheppard Avenue with a rapid transit line in the hydro right-of-way or on Finch Avenue.

Therefore, the most appropriate alignment for a rapid transit line in the Sheppard/Finch Corridor is along Sheppard Avenue.

4. CHOICE OF TECHNOLOGY

(a) Demand

Four generic transit modes were considered for the Sheppard/Finch corridor, namely busway; Light Rail Transit (LRT) at-grade, partially grade-separated or fully grade-separated; Medium Rail Transit (MRT) elevated; and subway.

The busway and LRT at-grade options would not adequately meet the 2011 demand generated by the projected land use. The projected peak passenger load in 2011 of 15,400 A.M. peak hour riders on Sheppard Avenue is beyond the practical capacity of a busway or LRT at-grade. The busway alternative, estimated to have a maximum capacity of approximately 10,800 peak hour riders, with station bypass lanes, is not a practical long-term option. However, the width of Sheppard Avenue is insufficient to permit construction of a median busway and bypass lanes. Consequently, the capacity of the busway would be reduced significantly to approximately 6,400, assuming 1-minute headways. In either case, a busway would not allow the Scarborough and North York City Centres to grow to maturity as major employment centres.

For LRT modes, capacities would be limited to approximately 12,000 using two-car trains at 1.5 minute headways, which is considered to be the maximum practical capacity for an at-grade LRT operated in a median transitway. While 3-car LRT trains could theoretically meet the identified 2011 demand, LRT operations would disrupt the flow of vehicular traffic at major intersections and therefore, this option was not considered feasible.

A fully grade-separated LRT option was also not considered feasible. While the capital costs might be lower than for a subway, the operating costs for LRT would be double that of a subway. Furthermore, due to the lower capacity of LRT vehicles in comparison to subway cars, more LRT vehicles are required to meet the same demand. The closer headways possible using a fully-grade separated LRT could satisfy the expected demand. However, the benefits of a fully grade-separated LRT must be weighed against the significant environmental, property and traffic impacts.

The Medium Rail Transit (MRT) elevated alternative exhibited few advantages over the LRT and Subway options and was only considered to be the most appropriate technology from an environmetal perspective for systems which could operate above-grade on elevated structures. Impacts on property and traffic were similar for elevated and at-grade options.

As a result of the above conclusions, the choice of technology along the Sheppard Avenue alignment was narrowed to LRT partially grade-separated and subway.

(b) Detailed Comparison of LRT and Subway Options

The following comparison of LRT and subway options is presented to explain thoroughly the technology choice along the Sheppard alignment. This analysis demonstrates that on the basis of speed of service and traffic flow, a subway is preferable to LRT along Sheppard Avenue. A subway provides lower travel times with sufficient capacity to accommodate expected ridership while having no impact on traffic circulation or property in the corridor.

Cost

As stated in the Sheppard/Finch study, the construction costs for the Sheppard Subway option are higher than for the LRT option. Despite the large initial investment, subway vehicle costs and operating costs are significantly lower than those of LRT. LRT vehicles are 17% more expensive to purchase and carry 33% less people than a subway car. Furthermore, operating costs (vehicle mileage and operator hours) decrease as one moves away from the busway and LRT options towards MRT and subway systems. Each kilometre of Subway service costs $1.10 to operate in comparison to $2.09 for LRT service (based on 1984 T.T.C. costs).

The Sheppard/Finch Rapid Transit Corridor Study concluded that the LRT (partially grade-separated) is the most cost effective option between about 10,000 and 15,000 riders per hour.

In summary, the high construction costs for a subway are offset by lower operating, property and vehicle costs when the demand is above 15,000. The LRT could only be cost-effective at higher demand levels if longer train lengths, lower manning requirements and a high degree of grade separation were implemented. Above 15,000 the use of the more efficiently sized subway vehicles with high level boarding and pre-paid fare collection is preferred.

Service

A comparison of the rail options in terms of service, operating speed and effects on the road system reveal that the rail options vary greatly in the level of service they offer.

When compared to subway service, a partially grade-separated LRT operates at lower speeds during peak and off-peak hours. A subway would have a peak period service speed of approximately 38 kilometres per hour, compared to LRT speeds of only 27 kilometres per hour. The resulting travel time differences are significant as travel times achieved with subway are 40% lower as indicated in Exhibit E.2.

A subway has no effect on the road system or traffic capacity except during the construction phase. An LRT along Sheppard Avenue, however, would require grade separations at five major intersections. Even with the grade separations, the reduction in capacity resulting from the additional left-turn phases would not leave adequate road capacity at most intersections along Sheppard Avenue. The conclusion was therefore, that a partially grade-separated LRT could not be accommodated without unacceptable impacts on road capacity in the corridor.

Social Environment

The social environment, which includes issues related to the displacement of residences, jobs, community facilities and services and noise, and visual impacts is more adverssely affected by the LRT option than by a subway. While no jobs or community facilities and services are displaced by the proposed subway, and only a few households are displaced, the LRT option would result in a significant displacement of households and jobs, in addition to affecting some community facilities. Significant residential and commercial property takings are required to provide a 45 metre right-of-way for six traffic lanes plus the LRT. In contrast, the residential and commercial property eliminated to provide for a subway is minimal, and no residential units are required. Thus in terms of minimizing the disruption of present land use patterns that exist along Sheppard Avenue, the subway option is the preferable choice.

In summary, when considering annualized cost, service, impacts on the social and natural environments and land use, subway is preferred to LRT for the Sheppard Avenue rapid transit alignment.

5. PHASING OF IMPLEMENTATION OF THE SHEPPARD SUBWAY LINE

(a) Phasing Options

As outlined in Chapter II of the main report, the Council of the City of Scarborough requested Metropolitan Council to establish, as first priority, construction of the entire Sheppard subway line from an extended Spadina Subway to the Scarborough City Centre. The Council of the City of North York endorsed the Network 2011 strategy, which provides for construcation of the Sheppard Subway from Yonge Street to Victoria Park Avenue as the first priority. The Region of Durham noted, in their response to Network 2011, that it would be preferable that the section of the Sheppard Subway east of Victoria Park be completed sooner than recommended in Network

2011. In addition, the Scarborough and North York staffs raised concerns about the need for the "wye" connection at Yonge and Sheppard associated with the recommended phasing, claiming that the "wye" costs are unnecessary interim costs.

Based on these comments, Metro and T.T.C. staff re-examined the phasing options for the Sheppard Subway. This re-examination was undertaken in a two-part analysis. The first part addressed whether it would be cost-effective to choose a phasing option which entails building an interim "wye" connection in the first stage. The "wye" connection to the Yonge Line is needed to bring Sheppard Subway trains into and out of service from the Davisville Yard. The second step compared three phasing options for the construction of the full line from the Spadina Subway to the Scarborough City Centre.

(b) Yonge/Sheppard "Wye" Analysis

Two alternatives were compared (see Exhibit E.3) to determine the cost-effectiveness of the "wye" connection at Yonge and Sheppard. One option involves building the Yonge to Victoria Park section first (with an interim "wye" connection to the Yonge line) followed by completion of the Spadina Subway to Yonge section (and a permanent "wye" connection to the Spadina Line). The second option eliminates the need for the "wye" connection to the Yonge Line by constructing the Spadina Subway to Yonge Street segment in the first stage.

The net discounted cost analysis of these two options shows that the cost difference with or without an interim "wye" connection is relatively insignificant. Further, operational benefits will be realized by having connections to both the Yonge and Spadina Lines in the long term. T.T.C. staff do not consider a "wye" at Yonge Street and Sheppard Avenue to be an unnecessary interim cost. While T.T.C. would not recommend the "wye" if Sheppard service could commence with a connection to the Spadina Subway, the "wye" will always have a strategic operational benefit to the subway system.

(c) Full Sheppard Line Phasing

The second part of the analysis was conducted to determine what the best option for phasing of the Sheppard Subway line would be if it were to be built as a continuous project. The three options for phasing are based on the findings of the above analysis which indicated that the "wye" connection was not the critical decision factor in terms of phasing.

The three options for phasing of the full Sheppard Line are:

1. (i) Yonge Street to Victoria Park Avenue (with a "wye");
   (ii) Spadina Subway to Yonge Street;
   (iii) Victoria Park Avenue to Scarborough City Centre;

2. (i) Spadina Subway to Yonge Street;
   (ii) Yonge Street to Victoria Park Avenue (no "wye");
   (iii) Victoria Park Avenue to Scarborough City Centre.

3. (i) Yonge Street to Victoria Park Avenue (with a "wye");
   (ii) Victoria Park Avenue to Scarborough City Centre;
   (iii) Spadina Subway to Yonge Street.

Exhibit E.4 summarizes the three phasing options for a full Sheppard Line, built as one continuous project.

Exhibit E.4 indicates that the difference in the net discounted costs for the phasing options is relatively small. Therefore, other decision factors were taken into account. The most appropriate phasing of the Sheppard Subway segments is to construct Yonge to Victoria Park as a first phase; Victoria Park to Scarborough City Centre as a second phase; and Spadina Subway to Yonge as a third and last phase. Implementation in these phases provides service in the heavily used, Yonge to Victoria Park segment first, and is in support of the Metropolitan Official Plan land use and development objectives. T.T.C. operational analysis have confirmed that this phasing plan is feasible and that the additional subway cars can be accommodated by making additions to the Wilson Yard, operating Sheppard trains out of the Davisville Yard and constructing the "wye" connection at Yonge Street and Sheppard Avenue.

An interim service improvement is required if the segment from Yonge to Victoria Park is built as a first phase. The implementation of reserved bus lanes on Sheppard Avenue from Victoria Park to the Scarborough city Centre is proposed to provide continuous express service until a decision is made in regards to future extensions to the rapid transit system and to establish riding habits in accordance with the Metropolitan and City of Scarborough Official Plan land use and development objectives. These measures will ensure adequate service on Sheppard Avenue until at least the first five year review, at which time a decision will be made on further extensions to Metropolitan Toronto's rapid transit network.

6. SUMMARY

The re-analysis of the Sheppard/Finch Corridor in response to municipal concerns has confirmed the need for an east-west line north of Highway 401. The Sheppard alignment supports the Metropolitan Official Plan, serves the additional demand created by the North York and the Scarborough City Centres and accommodates increased demands on feeder bus routes. Despite the possible impacts of upgraded GO Service, there remains a continued need for early implementation of a rapid transit line along Sheppard Avenue. Subway is the most appropriate technology in the view of the capital and operating costs, vehicle speed and service levels, and property and social costs.

The phasing of the implementation of the Sheppard Subway can best be achieved if the Yonge to Victoria Park segment of the Sheppard Subway were built as a first stage, followed by the segment from Victoria Park Avenue to the Scarborough City Centre and ending with the extension of the Spadina Subway north to Sheppard Avenue and the final Sheppard Subway segment east to Yonge Street. The Sheppard phasing analysis has not taken into account other rapid transit openings which might be interspersed among the Sheppard phases.

Exhibit E.1

Existing and Future Employment Centres in the Sheppard/Finch Corridor [1]

		Employment	
Centre	1981	2001	2011
North Yonge Centre	13,500	38,700	52,800
Scarborough City Centre	5,100	32,000	41,600
Consumer's Road Office Park	12,466	15,500	17,100
Kennedy/Sheppard Intermediate Centre	2,248	4,000	6,500

Note:

1. Source: Table S.1 Sheppard/Finch Rapid Transit Corridor Study Summary Report, May, 1985

Exhibit E.2

Sheppard/Finch Corridor

Travel Speeds and Selected Travel Times

Travel Speed (km/h)	**Existing Bus**	**Median Busway**	**Median LRT Partially Grade Separated**	**MRT/Subway**
Peak	20.0	24.0	27.2	38.0
Travel Time (minutes)				
Dufferin to Victoria Park (11.6 km)	34.8	29.0	25.6	18.3
Victoria Park to Scarborough City Centre (9.2 km)	27.6	23.0	20.3	14.5
Yonge to Victoria Park (7.6 km)	22.8	19.0	16.8	12.0
Yonge to Scarborough City Centre (16.8 km)	50.4	42.0	37.0	26.5

Exhibit E.3

Sheppard Subway Wye Analysis

(Assumes Completion of the Sheppard Subway from an extended Spadina Subway to Victoria Park Avenue by 1996)

Option #1	**Stage #1**	**Stage #2**	**Net Discounted Cost ($1984)**
Spadina Subway to Victoria Park Avenue	Yonge to Victoria Park Avenue	Spadina Subway to Yonge Street	41.31 million
* With a Wye Connection			

Option #2	**Stage #1**	**Stage #2**	**Net Discounted Cost ($1984)**
Spadina Subway to Victoria Park Avenue	Spadina Subway to Yonge Street	Yonge Street to Victoria Park Avenue	40.57 million
* No Wye Connection	* Assumes operating costs for Spadina to Yonge Segment		

Exhibit E.4

Alternative Phasing Options for Implementation of the Sheppard Subway from the Spadina Subway to Scarborough City Centre

OPTION 1.	July, 1993 STAGE 1	July, 1996 STAGE 2	July, 1999 STAGE 3	TOTAL CAPITAL COST ($1985)	NET DISCOUNTED COST ($1985)
	Yonge to Victoria Park (With Wye)	Spadina Subway To Yonge	Victoria Park To Scarborough City Centre		$56.35 Million
CAPITAL COST ($1985)	$519.7	$418.2	$353.6	$1291.5	
	July, 1993	July, 1996	July, 1999		
OPTION 2	Spadina Subway to Yonge	Yonge to Victoria Park	Victoria Park to Scarborough City Centre		$55.48 Million
CAPITAL COST ($1985)	$511.2	$385.1	$353.5	$1249.5	
	July, 1993	January, 1996	July, 1999		
OPTION 3	Yonge to Victoria Park (With Wye)	Victoria Park to Scarborough City Centre	Spadina Subway to Yonge		$55.45 Million
CAPITAL COST ($1985)	$519.7	$303.0	$468.8	$1291.5	